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THE DYNAMICS OF RELATIONAL QUALITY IN CO-DEVELOPMENT ALLIANCES

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Abstract

The dynamics of relational quality in co-development alliances

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Co-development alliances are formed to create new capabilities (technologies, products, services, processes, etc.) that partner organizations need in order to reach their goals. They involve the combination of competencies, and other intangible assets. These alliances typically face a high level of risks in terms of undesired leakages of confidential knowledge or failure to achieve the expected development. Relational quality, an important consideration in all alliances, is particularly key. Without it, partners might not be open enough to combine their knowledge effectively with the partners'. This article proposes a framework for defining, assessing, and monitoring relational quality in co-development alliances.

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Co-development alliances rarely follow a smooth course. These are cooperative arrangements in which partnering companies endeavor to jointly develop new capabilities, be it products, services, technologies, or business processes of various sorts. The following examples show a typical pattern: after an ambitious start, tensions gradually appear as the alliance is implemented and is confronted with difficulties. Then, the quality of the relationship degrades to a point where partners have no other choice than to either discontinue their cooperation or to engage in a joint turnaround effort.

- In the early part of the 1990s, Ericsson, ITT, and all the telecom equipment manufacturers faced a tremendous challenge: they needed to move into computing solutions but they lacked the sufficient competencies to achieve this in a reasonable period of time. They all realized that it would simply take too long to "go it alone." Hence, numerous alliances were formed with IT companies such as Hewlett-Packard, IBM or DEC in the hope of speeding up the development of their products. The joint venture (JV) between Ericsson and Hewlett-Packard was just such a case.[1] But what started out as an ambitious and exciting project soon deteriorated into a series of major misunderstandings over mutual commitment. Ericsson had expected that HP would simply be contributing its competences to the JV so as to participate in a fast-growing market; the IT giant, however, had hoped Ericsson would in return give it a preferred supplier status for their hardware supplies. The relationship between managers and delegated staff became more and

more tense as the misunderstandings transformed into disillusion and bickering among staff and at the board level, obviously putting the JV in a fragile position.

- A few years later, Lexmark, a spin-off of the typewriter and printer division of IBM, attempted a daring technological innovation to drastically reduce the cost of its entry-level laser printer. The engineering team set out to radically reduce the number of parts assembled in the printer. It was decided to use a new GE plastics resin to manufacture the frame of the printer, a core piece to which most parts of the printer were attached. Instead of the 20+ parts that typically composed a frame, it was expected that a single molded piece, with sufficient heat resistance, would suffice. But Lexmark could not achieve this *tour de force* on its own. It needed the cooperation of its long-time supplier, Minco, a leading US Mid-West molder and mold-maker.[2] The two companies set to work together but tensions in the allocation of responsibilities between the partners resulted in precious time being lost in this fast-paced market. The two companies had to radically redefine their relationship to avoid further delays.

- On the other side of the Atlantic, in the 1990s, two unexpected partners were trying to invent the car of tomorrow: Swatch, the acclaimed innovative Swiss watchmaker, and Mercedes, the emblem of German car quality. The two had agreed to combine their innovative capabilities to design a radically new car: the *smart*. The new car was expected to be original in many respects: from its dimensions (a two-seater) to its manufacturing organization (with risk-sharing suppliers) and the novel

marketing concept that involved special benefits to clients in terms of parking costs or the occasional rental of a large car, to name but a few.[3] As the development progressed, the harmony that had prevailed at the onset of the partnership ceased, and there were increasingly heated arguments concerning strategic design decisions between the partners, in particular regarding the powertrain that Swatch insisted should be based on a hybrid engine, something Mercedes considered to be not realistic. Personality clashes did not help either.

- Nearly a decade later, Hewlett-Packard and Cisco decided to form a partnership. The aim was to serve clients with innovative IT solutions that combined the partners' capabilities. In this case, there was no new organization set up. Rather, the two partners planned to coordinate their efforts in commercializing combined services. That meant alliance managers on both sides had to leverage their own organization's operations to fulfill the vision of the alliance.[4] Many tensions arose due to the perception gap between the top management levels, and the business units in charge of implementing it. Where the architects of the alliance saw benevolent partners, the people in charge of running the alliance mostly perceived each other as tough competitors.

- Back to Europe in the same time frame, two German blue chip companies, Deutsche Telekom and DaimlerChrysler, engaged in a giant project that angered many in a country reputed for its rigor and reliability. The two partners had been appointed by the German Ministry of Transport to design and deploy an electronic toll system for trucks that intensively use the country's dense *Autobahn* network. DaimlerChrysler brought its

knowledge of the trucking industry and technology, and Deutsche

Telekom contributed its telecom and IT expertise. The consortium

proposed an innovative system that was more ambitious and more

complex than any of the systems operating in neighboring countries, like

Switzerland and Austria. It relied on a device that combined a GPS

module, mobile communication functionality, and an electronic road

directory. The system was supposed to systematically record the vehicles'

route and automatically send the trucking companies an invoice.

Unfortunately, on the due date of August 31, 2003, the toll system was far

from being complete and the partners had to admit that it would take

much more time than planned. The Ministry of Transport had expected

substantial tax revenue from the system and claimed that the delays

represented losses of some €150 million per month.[5] The fiasco caused

considerable tensions between the lead partners and eventually led to a

change of leadership from DaimlerChrysler to Deutsche Telekom.

These examples show that, co-development alliances, from various industries

and time frames, face a typical challenge. At some point, relatively early in the

partnership, some events occur that strain the partners' teams and generally

cause a degradation of the relationship: mutual trust declines and the desire to

control the other party increases, resulting in poor relational quality that

hampers the alliance even more. These incidents in the life of co-development

alliances are unfortunately not exceptional. On the contrary, they are usual in

this type of cooperative arrangements. But bad relational quality is a hindrance

to joint problem solving. If the alliance is to continue to exist then a redefinition of the alliance is necessary.

This article aims to explain the nature and dynamics of "relational quality" in the context of co-development alliances with a view to suggesting a framework for monitoring the partners' relationships and toning down destructive tensions. We will first define this type of alliance, why they are on the increase, for what reasons they are prone to relational stress, and how these can be managed. The concept of relational quality, first introduced by Ariño, de la Torre, and Ring,[6] has proven to be a useful lens for analyzing the interaction between partners of co-development alliances, as has the model of Das and Teng[7] on confidence in alliances. We suggest combining these frameworks to take into account the various forms of trust and control that interact in strategic alliances of all types, and in co-development ones in particular. We therefore propose broadening the concept of relational quality to incorporate the interaction between the prevalent modes of trust and control at various stages in an alliance. Finally, we suggest a framework for monitoring relational quality based on the typical dynamics of trust and control in this type of alliance.

The specific nature of co-development alliances

Corporate alliances share several characteristics: they serve a strategic purpose and require the coordination of partners' resources, a sustainable distribution of benefits, and adequate cooperative behaviors. But they also differ in just as many dimensions such as the nature of the strategic goal, the governance structure, or

the balance of power among partners. When it comes to specifying co-development alliances, it is useful to apply the fundamental distinction between exploitative and explorative activities put forward by Joseph Schumpeter and further elaborated by James March.[8] Exploitative alliances typically aim to apply existing capabilities owned by one partner to business opportunities that the other partner can provide access to. These alliances were characteristic of cooperative arrangements formed in the second part of the 20th century by firms attempting to enter protected markets, e.g., Xerox forming a joint venture with Fuji Photo Film in the early 60s. The intention on the part of Xerox, certainly initially, was simply to exploit its technological lead (the xerographic process) in the Japanese market. It was not, what eventually came out of the Fuji-Xerox joint venture, to develop a whole set of innovative products that allowed the US pioneer of xerography to stay among the top players in the document management market.

By contrast, exploration alliances involve companies joining forces with the specific intention to develop new capabilities that partners need and will later exploit together or separately. The HDMAC consortium formed by Philips, Thomson, Nokia Consumer Electronics, and many others in the 1990s to develop a range of high definition television technologies is a good illustration.[9] The goal was to design a set of technologies for production, broadcasting, and the display of television programs that would become the official standard for all players in the television value chain in Europe. Members of this consortium, with the support of the European Union, conducted a series of R&D projects aiming to develop the key technological capabilities that were needed for the European

industry to offer high television products and services. Although this particular alliance did not succeed, the goal was clear: developing new capabilities to be later on exploited by co-development partners.

There are strong reasons why companies join forces in order to develop new capabilities, be it through joint R&D, collaborative product development, early supplier involvement partnerships, complementary product design agreements, among others. Whereas all types of alliances are vehicles to share costs and risks, For instance, R&D arrangements, the most visible – yet not the only – form of co-development, are confronted with the burden of increasing expenses as well as the uncertainty that characterizes innovation activities.[10] Other trends conducive to the formation of co-development alliances include the growing pressure of competition that increases technology rivalry, the deregulation of markets or the emergence of new standards that result in heightened barriers to entry.[11] Many other factors are mentioned in the literature: the acceleration of the pace of technological development, the shortening of product life cycles, and the increasing cost of updating capital requirements.[12] There is substantial evidence that R&D alliances have experienced a rapid surge in the past few decades,[13] with studies reporting a tripling of the proportion of R&D collaboration agreements relative to the total of alliances formed since the 1980s.[14]

From an organizational standpoint, co-development alliances come in a variety of forms ranging from equity joint ventures, to collaboration contracts that involve co-location or the coordination of separate R&D efforts without the creation of a new corporate entity. Research actually shows that organizations

formed with tighter integration, such as joint ventures, seem to favor the sharing of information between partners,[15] while actually being increasingly less often used.[16] Yet while strategic alliances in general are thought to bring unique learning opportunities,[17] [18] co-development alliances are exclusively designed to acquire new knowledge because they aim at creating new capabilities that entail new organizational, technological, and commercial competencies.[19] For this reason, these alliances are, more than other types of cooperative arrangements, riskier endeavors. Not only are they exposed, like any strategic alliance, to shifts in the business environment or changes in partners' priorities, but they also face innovation risks and the challenges of knowledge sharing.[20] They require efficient problem solving processes and openness on the part of the partners to be able to effectively combine the partners' innovative capabilities. It is therefore expected that the failure rate of co-development exceeds that of other forms of alliances.

Strategic alliances, of all forms, are not irreversible arrangements. On the contrary, their flexibility is one of the reasons why they have been such a popular way to explore technological opportunities.[21] They allow tackling the exploration of new technology, developing new products, or entering new markets, at a lower level of strategic commitment thanks to the partners' cost and risk sharing. Co-development arrangements are probably even more "provisional" since their mandate is first and foremost to develop new capabilities for their partners and so they are therefore not as open-ended as exploitation-oriented alliances. The combination of capabilities may be undertaken separately or sometimes jointly, but the development phase is similar, in terms of timeframe

and goal setting, to a technology development project. So when Lexmark contracted with Minco for the development of its Liberty printer, they were undertaking a "joint project." Both partners assigned engineering and management staff that were expected to deliver an integrated solution. For this reason, the nature and quality of the relationship between partners and the persons involved in the collaboration is crucial.

Relational quality in co-development alliances

Psychologists have defined "relationship quality" as the amount of satisfaction, or dissatisfaction, that persons engaged in an interpersonal relationship experience.[22] The concept of "relational quality" is its equivalent for relationships between organizations. It was introduced by Africa Arino and José de la Torre in an article published in 1998, and was further elaborated by these authors and Peter Smith Ring. They defined it as "the extent to which the principals and the agents of alliance partners feel confident in dealing with their counterpart's organizations."[23] Elsewhere, they explained that partners engaged in alliances repeatedly tend to develop a high quality of relationship when they realize how fair they must be to each other in order to preserve future collaboration opportunities. This results in a higher willingness to rely on trust when confronted with difficult decisions. In other words, relational quality can also be defined as the perception of the persons responsible for an alliance that their own organization and the partner company form a team, rather than set up opposite camps.

Because some of the challenges faced by co-development alliances are relatively similar to those faced in technology or product development projects, we find it useful to consider how this literature treats the questions of convergence and divergence between actors involved in this process. The framework designed by Clark and Wheelwright seems particularly relevant in this respect. The authors stress that the organization of product development projects can differ in terms of cross-functional integration, or the extent to which the individuals contributing to the project work under a unified leadership and common goal, as opposed to when they are primarily representing their own functional department (marketing, operations, R&D, etc.).[24] The model contrasts two options in particular: lightweight and heavyweight project organizations. In the former, the leader has limited authority over the persons and the resources assigned to the project. She cannot do much more than coordinate the contributions on which she has little influence as these are controlled by functional departments. This type of development organization is not so different in its logic to a committee where delegates are assigned to defend the agenda of their respective departments rather than share a common one. By contrast, the "heavyweight" organization is characterized by a project leader with substantial authority over the persons and resources. Members are not just representing their departments; they "belong" to a *team*. They have a common goal, a common leadership, and the need for mutual support. Other scholars have mentioned an intermediate option in which both functional departments and project management share the responsibility in a typical "matrix" situation, hence called "matrix organization."[25]

The distinction between "lightweight" and "heavyweight" organizations can be applied to co-development alliances. The management of an alliance can function like a committee in which members (i.e., management and staff seconded by each partner) are primarily interested in the pursuit of their employer's objective and pay limited attention to the other partner. The stormy cooperation between Ericsson and Hewlett-Packard (HP) is a good illustration of this situation. HP kept pushing the "preferred supplier status" as a condition to its cooperation while Ericsson insisted on keeping control of the joint venture.

But a co-development alliance can also operate like a team where the management and staff seconded by each partner realize they have a common destiny and focus on a common goal, under a unified leadership, without losing sight of their own company's respective expectations. The long-lasting joint ventures between Fiat and Peugeot in commercial and passenger minivans provide an adequate illustration: the partners demonstrated their attention to each other's concerns in the design of the partnership's business plans. An important issue they faced was the production capacity of the plant. Peugeot and Fiat had decided to share the output 50/50 and therefore needed to agree on the maximum production capacity. While the French partner felt confident they could sell over 300 units a day, Fiat was more reluctant given the potential for minivans in its traditional markets. Yet Peugeot agreed to compromise with a lower capacity in order to ensure Fiat's satisfaction.

Insert Table 1 about here

When partners operate as a "heavyweight" alliance, they form a team and enjoy high relational quality. They communicate effectively and share their knowledge more openly; this is beneficial for the partnership's co-development activities. "Lightweight" alliances are more effective at protecting allies' capabilities from undesired leakages, but they tend to be slower and more costly[26] because the partners behave like two camps pursuing their own benefits rather than a common goal. They are similar to an international committee where country representatives, first and foremost, push their own agenda. "Matrix" alliances are, as is the case for product development,[27] the most common mode of operation of co-development alliances since, by construction, they combine the resources and competencies of two (or more) organizations that are typically trying to balance their own interest and their partner's. Co-development alliances, however, do not stay in the same mode (e.g., "heavyweight" or "lightweight") throughout their existence. On the contrary they tend to evolve and shift between modes of operations as the partnership confronts difficulties and triggers the partners to seek a change in the governance and eventually the relationship. Each of these three modes is characterized by a certain mix of trust and control.

Trust and control as key ingredients of relational quality

There is not much debate on the need for both trust and control in any form of alliance. Yet there is wide agreement that these two attitudes affect each other. But, the interaction between these two concepts is quite complex and existing frameworks offer little practical guidance for executives tasked with the setting up and management of alliances.[28] In this section, we propose a model that addresses this issue with an practical perspective.

Trust from different angles

Let's first recall the now widely accepted definition of trust as "… a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions of behavior of another."[29] In other words, trusting a partner implies having positive feelings about its intentions and this leads to being willing to expose oneself to a potential risk in the relationship. But what makes an entrepreneur accept such a risk, that is, what is the basis on which such a decision is made? What are the sources of trust, or how does a partner come to trust the other as they form an alliance? Three mechanisms have been identified in this respect.[30] As we discuss them, we shall see that they are more or less consistent with the need for control.

The first one is "deterrence." It is based on the perceived cost of deception. An entrepreneur would trust a business partner simply because she knows that it

would be foolish for the partner to misbehave. She expects the partner to be fair because the negative consequences of being unfair would be very high him. He would lose the opportunity to do further business with her or he would harm his own reputation doing business with other. Deterrence is akin to the cold war dilemma in which both the USSR and the USA built an arsenal meant to inflict costly retaliation on the other camp. It is legitimate to question whether this mechanism is truly consistent with the concept of trust, which generally has a positive connotation, but it is nonetheless the only basis for decisions in business transactions for which there is no past data to rely on. Ring (1996)[31] and Barney and Hansen (1994)[32] have described this type of trust as fragile and weak, respectively. This is because it is merely a rational expectation of trustworthiness that has to be tested against actual behavior to be validated in future interactions. Therefore deterrence-based trust is highly subject to revision, certainly more than the two next types. The other two mechanisms indeed rely on the assumption that there is background information available on the partner to inform the decision to "accept vulnerability" or not.

The second mechanism is known as "knowledge-based" trust because the observation of the partner's actions, performance, and interaction capabilities allow a sharper view of her trustworthiness. Seeing how a supplier respects deadlines, the quality standards, the negotiation style, and the openness to adjust plans, etc., goes a long way toward forming a positive perception of its reliability (or lack of it). Knowledge-based trust is considered stronger because it originates in a multiplicity of data points, not just reasoning. Yet it is not irreversible. Deviations from the observed pattern might modify the trust level,

the more so if the relationship is relatively young. The strong relationship between Fuji-Xerox and Xerox, for instance, is based on years of interaction at numerous management levels. It probably overcame major tensions that would have sunk a young partnership such as Toll Collect.

The third and last mechanism supporting the emergence of trust is considered even stronger in the literature. It is called "identification" and results from the effect of time on the relationship. As time elapses, in personal as well as in business relationships, individuals involved in repeated interactions tend to grow a mutual appreciation for each other and, assuming the relationship is satisfactory enough, eventually develop emotional bonds to one another. They gradually develop common norms of behavior, seek to bring mutual satisfaction, and eventually endorse each other's values. This stage of trust can only be reached after a long experience of cooperation, and if competence and reliability have been proven consistently satisfactory. This type of trust is certainly less reversible compared to the two previous one, but it still is, since betrayal can never be excluded in human endeavors, especially in complex business partnerships.

It is quite clear that trust in inter-organizational contexts, such as strategic alliances, is substantially more complex than in inter-individual relationships and there is a considerable literature warning to avoid the confusion (see, for example, Zaheer and Venkatraman).[33] Yet Rousseau and her co-authors note that there are also striking similarities in the cause and effect of trust across contexts.[34] It is individuals who experience the psychological feeling leading

them to accept vulnerability, but as they share their perceptions with colleagues, they influence the general feeling of trustworthiness of the partner organization among their colleagues. The relationship between Lexmark's project leader Greg Survant and Minco's Head of Engineering, John Levering, was far more than an inter-personal issue. After they successfully redefined the role of Minco in Lexmark's new printer development, their mutual trust rose and so did the general perception of the reliability and integrity of Lexmark vis-à-vis its key supplier. Just as inter-personal trust is a dynamic process, so is inter-organizational trust. It is constantly being reviewed, based on new information about the partner's actions and behavior: late delivery, poor service quality, arrogance, or worse, evidence of leakages of confidential data quickly result in suspicion that diffuses within the concerned organization at great speed. And the search for control in the partnership is a particularly important element that influences the evolution of trust.

Control from different perspectives

Control is a concept that is at least as complex as trust. Like trust, it has several different meanings that we need to distinguish in order to focus on the dimensions that affect trust the most. Control has been defined as "any process in which one party affects the behavior of another."[35] In management terms, it is the action by an economic agent to limit the autonomy of another with a view to reaching a desired objective. Control can therefore be considered as having influence or power over other individuals or organizations affecting one's performance.[36] When it comes to strategic alliances however, we must make a

distinction between control over the partnership and control over the partner. The former consists of influencing the activities of the partnership so that it reaches its agreed-upon objectives and no one questions its acceptability. Yet, to the extent that a partnership's activity depends on partners' contributions, controlling it often means exercising influence on the other partner. Definitely, Lexmark used its leverage as a major client of Minco to get it to quickly find a solution to project delays. There are, however, various ways through which control of a partner can be exercised and they are not without consequences on the relationship quality.

There is a broad consensus, following William Ouchi's pioneering work,[37] that three main modes of control co-exist: behavior, output, and social. The tightest mode consists of monitoring and influencing a partner's actual behavior. As an example, Lexmark, worried that the project was running increasingly behind schedule started to investigate the daily activities of Minco's project team, requesting more detailed reports, and checking even on the daily activities of Minco's team leader. Behavioral control is often triggered when a partner feels the need to check that the other party is contributing as planned.

The second mode, output control, consists of monitoring a set of indicators measuring the amount "produced" by the economic agent responsible for an activity so as to ensure that they match the objectives set (e.g., key performance indicators). The controlling party would have to take action if the output observed did not match the level expected, and perhaps resort to behavioral control. In an alliance, there is often a need for such a type of control. For

instance, Hewlett-Packard wanted to know how well Ericsson sold the JV's telecom management solutions. The joint venture did not commercialize directly, but did it through one of its parents, Ericsson, and the other partner HP, obviously needed to know how well this mission was being fulfilled. This issue seems quite straightforward. But output control might be more intrusive when the monitoring partner requests information about the other party's internal operations as they contribute to the alliance. Be that as it may, behavioral and output controls are both rather formal. They imply that the partner being controlled will be subject to scrutiny and that its performance will be measured against a benchmark, with varying degrees of interference in its own organization.

The third mechanism defined by Ouchi is by contrast far less intrusive. It is called "social control." In some organizations, formal controls are simply not possible because the monitoring authority lacks a sufficient knowledge of the production process and of the output. Ouchi takes the example of a research laboratory in which the investigation process is quite complex and in which behaviors cannot be unequivocally associated with a success that, in turn, is very difficult to measure ex-ante since the significance of scientific discoveries sometimes require a long period of time to be understood. In this environment the formal types of control are inadequate. That is why research organizations rely on totally different control processes to keep their staff performing: the adhesion to a strong set of values that are promoted by the community and expressed in the forms of rituals and ceremonies during which awards are presented to well-behaved colleagues, for example. In this organizational context, there is no

superior authority exercising control, rather the whole community ensures that individuals behave and produce in a consistent manner.

Is there an equivalent of "social control" in strategic alliances? Co-development alliances rarely function without any type of formal control. On the other hand, precisely because they are aimed at the development of new capabilities, just like R&D organizations, partners generally have a limited understanding of the other party's production process and much less an ability to "measure behaviors" effectively. This point can again be adequately illustrated by the relationship between Lexmark and Minco. A key reason why Lexmark let Minco drift was their lack of understanding of the mold-maker's process. Greg Survant and his colleagues did not have a sufficient appreciation of the technical specifications Minco needed to obtain throughout the mold processing. Likewise, Minco's staff and management were at a loss when it came to monitoring Lexmark's process. And both needed to trust their partner was behaving and working in a manner consistent with their community's standards and their sense of mutual dependence.

Control mechanisms, unlike trust, are often negotiated at the onset of a partnership. Parties set objectives, schedules, budgets, and agree by contract on what information to share and what are the respective commitment and obligations. But in all contracts there are clauses that are only triggered when the relationship faces certain difficulties. As a result, the forms of control really exercised by the partners of an alliance typically change over time. Ericsson, for instance, became increasingly inquisitive when it realized that Hewlett-Packard

was about to launch a software solution that would compete with their joint venture offering and used the shareholders' agreement to push forward its agenda. Hence, control exists "on paper" at the beginning of the alliance, but its actual implementation changes depending on the need perceived by the partners.

The interaction of trust control and relational quality

The question of whether or not trust and control are substitutes or complements has generated an abundant literature. In their influential article, Das and Teng made a convincing argument that trust and control are rather supplements of each other.[38] Both contribute to creating a confidence that the partner will deliver on its promises in a predictive way. That's why they may not only co-exist, but can also grow without hampering each other as originally thought. Actually, the presence of trust may facilitate control because the latter is more easily accepted when there is trust in the controlling authority. The more trust and control there is, the better? Is there an optimal balance? Perhaps, but how could they be measured and compared? There is certainly no common metric for trust and control. Therefore we suggest analyzing the mechanisms behind each dimension and how they might interact.

When considering trust and control in the different forms we described, we can see that they cannot be totally independent dimensions. While both are definitely distinct and supplement each other, the mechanisms that support them range from mutually reinforcing to contradicting. For instance, trust based

on identification seems quite consistent with social control and certainly helps to make it more efficient. Partners share similar values and for that reason feel they belong to the same community. On the other hand, an insistence by one of the partners to implement behavioral control on the other party is likely to negatively affect identification-based trust. Faced with such a demand, the party subject to scrutiny may retire into a less empathic form of trust, based on knowledge or even deterrence. By contrast, allies working in a trustful relationship based on mutual knowledge of competence would certainly be willing to accommodate some form of output control since it is contributing to a better understanding of the partner's competence and performance. The mix of control and trust are therefore interacting in such a way that they influence each other. What matters here is the nature of the trust and the control coexisting, or its "mix." Some combinations appear to be rather stable and positive for relational quality because they are mutually reinforcing and others not so since they contradict each other's basis and necessarily produce tensions in the relationship. Consequently, the mix of trust and control impacts the relational quality between partners. Partners who have a strong feeling of identification with each other and rely on social control certainly perceive that they form a "team" together. On the other hand, partners who only count on deterrence and behavioral control have more of a feeling of two opposite camps. Relational quality is therefore at its lowest possible level. Intermediate combinations of trust and control lead to an intermediate level of relational quality as displayed in Table 2.

Insert Table 2 about here

As we noted earlier, neither trust nor control are set once and for all in a partnership. Both partners continuously review the evidence they have available for trusting the other party as new events happen in the relationship. They permanently consider the leverage of deterrence, the knowledge of the partners' capabilities and reliability, and the room for identification and how it affects their trust in the partner. At the same time, they observe the control that the partner implements, and whether it emphasizes behavior, output, or social processes. They can then consider if this is sending a signal that is consistent with the nature of their trust and control preferences or whether they need to revise it. The same process is at play with the other partner, and gradually, through continuous adjustments, the alliance will find an equilibrium characterized by a certain mix of trust and control. These dynamics bear some resemblance to the evolution of tension in a married couple: mistrust breeds mistrust, tight control calls for tighter control, but signs of appreciation increase mutual confidence which in turn releases tension. The same goes for strategic alliances. As the relationship became tense between Ericsson and Hewlett-Packard in the EHPT joint venture, the pattern of communication could no longer continue through informal discussions between both partners' alliance managers. A drastic shift took place with the alliance sponsor at HP calling his counterpart at Ericsson to request a change in the joint venture management that had been under the responsibility of the Swedish partner. This initiative

necessarily triggered a counter-reaction from Ericsson that did not want to lose control over the joint venture, and what started as an exciting project stalled under board level infighting.

As relational quality evolves throughout the life cycle of the alliance, it is likely to shift between the different alliance management contexts (heavyweight, matrix, lightweight). Figure 1 offers a visualization of the mix of control and trust on the relational quality map.

Insert Figure 1 about here

In the North West region, the type of control exerted by partners is set tight and the basis for trust is rational. The dominant modes of relationships there are behavioral control and deterrence-based trust. These are mutually consistent with each other and provide a certain stability. However, partners continuously check each other's behavior in order to ensure that the bases of deterrence are present like in an "armed peace" situation. Therefore relational quality is limited and cohesion is limited. Hence the alliance operates as a lightweight project organization in which the partners defend their own interests. There are two alliance bosses, one from each camp, and staff and managers align to their own organization. In this type of configuration, the alliance can only last as long as the partners' goals stay mutually compatible and deterrence is balanced. This type of alliances can perhaps achieve a certain level of stability in the absence of major

difficulties, and if partners keep their goals unchanged or move in consistent directions. But, a shift in the business context or in the priorities of one of the partners might cause the alliance to topple. Therefore this configuration generally doesn't last: it will either be a prelude to the partnership termination, or will trigger the partners' effort to give their relationship a new future through a turnaround process. If successful, the alliance will then shift into the "matrix" configuration.

In the South East region, team spirit is high with partners reaching a high level of identification to each other. Control is primarily based on common values that are shared with a large reference group to which both partners belong, for instance, in a specific industry setting. Hence, there is a high level of consistency between the origin of trust and the locus of control. What keeps the partners together is stronger than what could set them apart. This situation is similar to the heavyweight product development organization. Few alliances can operate very long in this region. Most enjoy a limited portion of their life cycle there. The initial phase of the alliance between Renault and Nissan provides an illustration. A strong convergence of views developed initially between the two CEOs (Louis Schweitzer and Yoshikazu Hanawa) as they designed and orchestrated the delicate process of integration. At the onset of the relationship, actually even before it was formalized, joint project teams involving dozens of decision-makers from both organizations were set up to identify synergies. Despite strong beginnings, and due to inevitable difficulties, partner relationships later moved in a northwesterly direction, a typical evolution in the life cycle of alliances.

In between these two extreme modes, lightweight vs. heavyweight, stands an intermediary configuration that we call the "Matrix Alliance." In this configuration, alliance delegates have a dual reporting line: they "belong" to the alliance organization but still report to their parent company. They have two bosses and presumably split loyalty. Knowledge-based trust and output control are consistent with this configuration. The quality of the relationship in this zone is typically good or medium, but it falls short of the excellence displayed in the heavyweight regions due to delegates being mindful of their own organization's interests in the alliance. The alliance between Fiat and Peugeot in the minivan market gives an adequate illustration of this configuration. While partners joined forces to design and manufacture the new car, they would compete head-on in the market with a product that was going to be very similar, except for the cosmetics. Yet, the partners initially showed mutual concerns, as explained earlier.

The other regions indicated in Figure 1 in the North East and South West angles (in black) are not associated to any of the alliance configurations. This is to indicate that those regions are not stable because they are characterized by inconsistent forms of control and trust that call for an adjustment that could be either a fast termination or a drastic redefinition of the relationship. So alliances that venture in these regions are likely to either be stopped or to move to one of the three main regions of what we can call the "relational quality map."

As relational quality is important for the effectiveness of co-development alliances, it should be regularly assessed. This is, unfortunately, not often the

case. Executives supervising an alliance typically discover too late the effect of poor relational quality when the co-development project misses a major milestone or the partnership fails to develop the technological solution as expected. Such a crisis situation happened in the summer of 2003 at Toll Collect, the joint development project involving Daimler and Deutsche Telekom where it took months before the extent of delays was realized. It took almost a further 18 months – effectively doubling the project duration – to achieve what had been initially promised in the contract with the German Ministry of Transport. The alliance partners had to pay considerable penalties of several hundred million Euros. Reportedly, staff involved in the co-development tried to alert their management about difficulties and increasing tensions, but with no success. Development teams repeatedly noticed that they could not obtain critical information from the partners and became impatient at each other. But both partner alliance managers denied the existence of a major problem. Yet, only weeks before the due date were the partners forced to admit they would not deliver on their promise. A monitoring of relational quality in the partnership would have warned of increasing tensions and called for an earlier project reorganization.

Managing relational quality

Relational quality is a constantly moving reality. Many events affecting the joint innovation alliance or its environment may cause a change in the quality of the relationship between the partners and between the people involved in the alliance operations. Some are intentional actions aiming to undermine the

partnerships and possibly cause damage to the other partner. But those are rather rare occurrences, as those familiar with strategic alliances will know. More often, and more simply, these events are due to unexpected incidents, or indeed accidents, hitting one of the parent companies, such as a sudden change of management or major financial difficulties with another line of business, for instance. In addition, any alliance might be confronted with disappointing results, not reaching its development objectives, or doing it at a much higher cost relative to what was planned. Whatever the initial trigger might be, it will cause a change in the attitude of those people concerned that will impact relational quality before producing its effect on the alliance performance. As an example, HP discovered quite late that jealousy had developed between their staff and Ericsson's due to salary differences and labor contract conditions. Obviously, this did not contribute to a harmonious team feeling.

The worse that could happen is that management learns too late about a shift in the relational quality. Today's good performance may get too much attention, and hide the fact that the tensions are mounting and threaten the future. Degrading inter-personal trust, doubts about intentions, competencies, disappointment regarding the partners' commitment, feeling of being "under scrutiny", are often a prelude to tensions in the relationship and eventually to declining performance. The alliance managers, from both parties, would therefore want to regularly monitor the drivers of relational quality (say T_1, T_2, T_3 as shown in Figure 2).

Insert Figure 2 about here

Individuals involved in a co-development alliance (supervising executives,

alliance management, but also staff) are as many "sensors" of relational quality

and it is useful to collect their perceptions about the partnerships, at all levels,

with professional methods on a regular basis. Certainly the internal sponsors, the

executives supervising the alliance, have her own perspectives, just like the

alliance managers responsible for daily operations, but so do the other managers

and staff who contribute to the co-development. Some of them may have

misperceptions, poor appreciation, or even an exaggerated view of the relational

quality. But the approach here is similar to a 360-degree feedback survey: it's the

overall picture that counts. No one is right, but the overall tone of the

perceptions should not be ignored. Figure 3 provides a sketch of the issues that

can be surveyed with all individuals involved in the co-development alliance. It

gives some clues about how the relational quality evolves and its potential

impact on the atmosphere of cooperation between the two organizations.

Insert Figure 3 about here

It is certainly better if both partners undertake such a monitoring and research

the convergence or the divergence between their respective survey results. They

should then confront their findings and discuss possible initiatives to address the issues being identified.[39] But the framework is still useful if the monitoring is done only on one "side." Tensions affecting relational quality would certainly already be noticeable, but it wouldn't be as easy to remedy them.

Most, if not all co-development alliances have their moment of truth. It is quite rare for such cooperative ventures to unfold exactly as planned. They typically reach a point, sometimes only after a couple of years or sooner, when partners realize that the original plan won't work and that the alliance should be either terminated or redefined. Stephen Steinhilber,[40] who oversaw Cisco's extensive portfolio of strategic alliances for several years, speaks about the "tipping point." This stressful point cannot be totally avoided, but it can be anticipated thanks to a regular monitoring of relational quality and the subsequent search for its underlying reasons. Precious time would then not be lost and major surgery would not need to be undertaken when the damages to inter-personal and inter-organizational relationships are already in full swing.

Conclusion

Co-development alliances, in which firms combine their competencies to develop new capabilities, have become an important feature of today's innovation strategy. And they are likely to continue growing in the coming years, if not decades. More than any other form of alliances, they are highly sensitive to the quality of relationship between partners because these cooperative arrangements require the sharing of knowledge and confidential information.

Partners need a sufficiently high level of confidence to effectively cooperate. This requires an adequate combination of control and trust. Yet, both trust and control between partners comes in various forms that are not always mutually compatible and may lead to a poorer or richer relational quality. This article offers a new insight, with practical implications for managing these complex arrangements. It argues that executives in charge of such alliances should monitor the evolution of relational quality over time in order to identify possible shifts and discuss potential remedies to be initiated in a coordinated fashion. Overall, these insights should help executives in charge of co-development alliances cope with the "moment of truth" that most of these arrangements face after a few years, if not months, of operation and help initiate the required redefinition that proves necessary in most cases.

## Table 1: Teams vs. committees in co-development alliances

	"Lightweight" Alliances	"Matrix" Alliances	"Heavyweight" Alliances
Alliance leadership	Split (tensions between alliance leaders from both "sides")	Shared	Unified (alliance leaders from converge on most issues)
Alliance leaders	Exclusively focused on respective interests	Endeavor to balance each partner's interests	Pay significant attention to the partnership's interests
Alliance staff	Primarily loyal to own employer	Shared loyalty between alliance and employer	Strong loyalty to alliance
Perception of partners' delegates	Not open to knowledge sharing	Cautiously sharing knowledge	Willing to share necessary knowledge openly
Joint problem solving	Tense and costly	Balanced	Effective
	COMMITTEE	⟵⟶	**TEAM**

Table 2: The mix of trust and control

(RQ = Relational Quality)

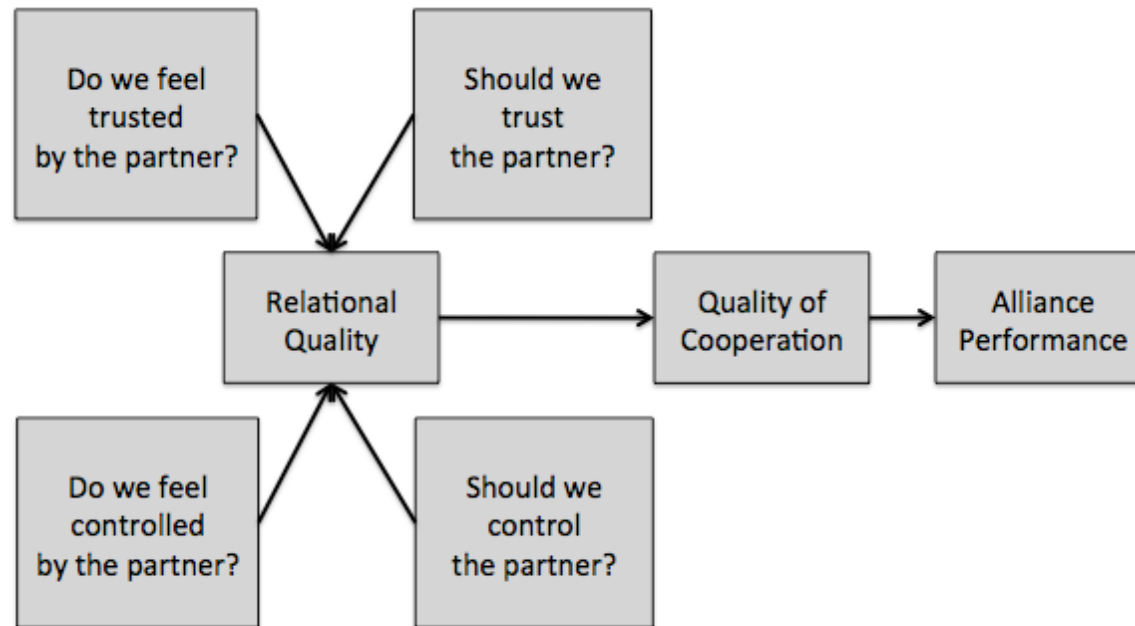|	Behavioral control	Output control	Social Control
Deterrence-based Trust	Poorest RQ	Poor RQ	Medium RQ
Knowledge-based Trust	Poor RQ	Medium RQ	Good RQ
Identification-based Trust	Poor RQ	Good RQ	Best RQ

Figure 1: The relational quality map
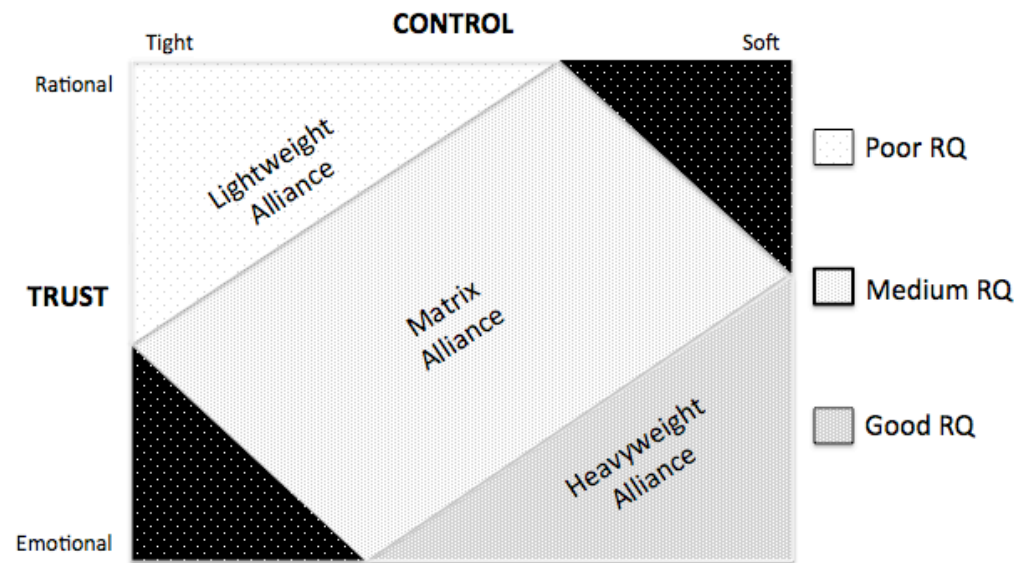
Figure 2: Regular monitoring of relational quality
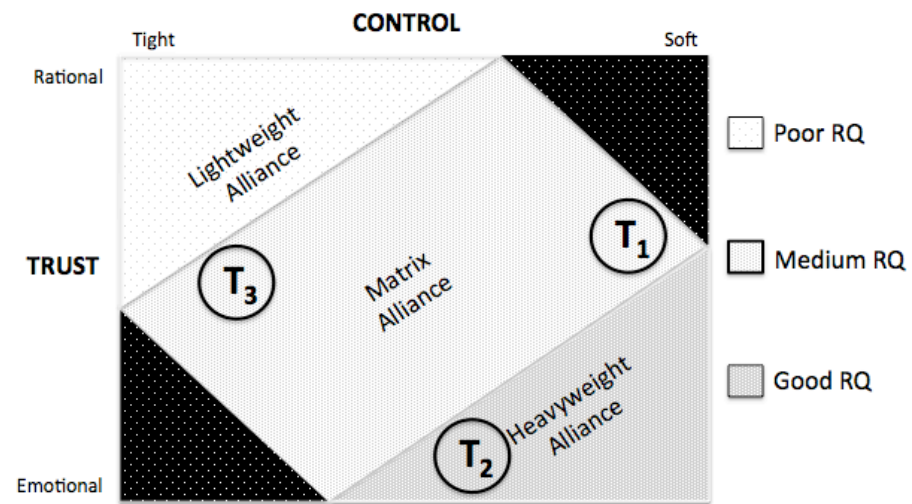
Figure 3: A model for monitoring relational quality

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