

UNDERSTANDING THE BUILDING-BRICKS OF NETWORKS: A PROCESS VIEW ON STRATEGIC ALLIANCES

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Abstract

The proliferation of interfirm networks has drawn the attention of researchers to this network phenomenon. However, in some respects the shift to a higher level of aggregation is premature, since we are only beginning to understand the dynamics of interfirm linkages. Hence, network theories risk to be built on quicksand. In this paper, we work towards a better understanding of interfirm alliances as the building bricks of networks. Much of the prior research tries to explain alliance outcomes primarily on the basis of the initial structuring of the alliance, thereby missing much of the action. It also leads to inconsistencies in the explanations of alliance outcomes. As opposed to this static nature of prior research, we provide a process model and a set of propositions based on transaction cost theory and resource based theory that can guide empirical research into the dynamics of interfirm alliances. The model highlights the mediating effect of process characteristics in linking initial conditions to alliance outcomes. Hence, in the approach advocated here these processes are of crucial importance for understanding the formation and evolution of networks.

Key words: Networks, Alliances, Process

Competitive paper, Networks

1. Introduction

The past two decades have witnessed a dramatic rise in the use by business firms of alliances of various kinds (Hergert and Morris, 1988; Hagedoorn, 1995), and, with a time lapse, in the attention paid to this phenomenon by researchers (Contractor and Lorange, 1988; Harrigan, 1988; Kogut, 1988; Osborn and Hagedoorn, 1997). To understand the dynamics of competition in markets, looking at individual firm strategies is no longer sufficient. Attention has to be paid to the effects of actions at higher levels of aggregation, i.e., networks of firms, which through the formation of co-operative ties form alliance blocks or constellations. Only if the size, composition, and internal organization of the alliance blocks operating in a market are taken into account can the competitive dynamics of that market be fathomed (Nohria and Garcia-Pont, 1991; Gomes-Casseres, 1996; Madhavan, Koka and Prescott, 1998).

The increased attention paid by researchers to network phenomena is to be evaluated positively, as it reflects an important development in the real world. However, in some respects the shift to a higher level of aggregation in theory building is also premature, since we are only beginning to understand the dynamics of interfirm linkages. Any analysis at the level of alliance blocks will have to be based on simplifying assumptions concerning the building bricks of these constellations, viz., the linkages between the firms forming the larger entity (Vanhaverbeke and Noorderhaven, forthcoming). Furthermore, an understanding of the composition of inter-organizational networks has to be based on a theory of why and with whom firms enter into alliances (Gulati and Gargiulo, 1999). As yet, our knowledge of these constituent elements is far from perfect, and network theories risk to be built on quicksand.

In this paper we address one particularly important gap in our knowledge of interorganizational alliances. Whereas recent criticism of the interfirm alliance literature has

identified a number of shortfalls, the most prominent among these is the lack of attention to dynamic aspects. Much of the research tries to explain alliance success primarily or solely on the basis of the initial structuring of the alliance (Yan, 1998). The underlying premise of these studies seems to be that "choosing the appropriate partner, aligning strategic and economic incentives of the partner firms, and using ownership control are critical determinants of partnership success" (Aulakh et al., 1996: 1006).

However, the results of this line of research are often unclear and sometimes contradictory. For instance, various researchers have come up with conflicting predictions on the impact of control on performance of interorganizational relationships. Killing (1983) argues that dominant-control joint ventures tend to be more successful than shared control joint ventures, as decision making by a dominant partner reduces co-ordination costs. Killing's predictions are supported by Anderson and Gatignon (1986) who proposed that entry modes yielding greater control would be more efficient. This view is shared by Millington and Bayliss (1997), who found that, among UK-EU joint ventures, those with a dominant partner survived longer. However, works of other researchers have not provided much evidence to support Killing's contention that dominant control by one of the partners exhibited superior performance. Though Janger (1980) used a classification schema similar to Killing's, he did not find one type of joint venture to be more successful than the other. Awazdi et al. (1986) failed to find any relationship between the degree of parent control and performance. Bleeke and Ernst (1991) found that in their sample of 49 strategic alliances, those with an equal split of ownership experienced higher success rates than those with unequal split of ownership. Beamish (1984) from an analysis of 66 joint ventures between western and local firms in developing countries found that performance tended to be unsatisfactory when the foreign partner had dominant control, and that shared control enhanced performance of the venture. The overall conclusion seems to be that the

relationship between control and performance is far more complex and less direct than scholars may have perceived, leading to inconsistencies in their results.

This instance of inconsistencies in the link between control and performance together with similar instances cited elsewhere in the paper suggest that studies linking alliance outcomes directly to initial alliance characteristics miss much of the action. This type of study is basically static: it is assumed that all the factors influencing the alliance outcome are in place at the start of the alliance, and that later developments within or around the alliance can be left out of consideration. In this paper we take issue with this view. Sure, initial conditions are important, but even if the initial conditions are favourable, the alliance may go sour if the interaction between the partners fails. Conversely, an alliance started with relatively unfavourable structural conditions may be successful if the partners are able to gradually adapt the structure of the alliance to its function. Failing to take these possibilities into account is likely to lead to inconsistent results as those mentioned above. The processes of alliance formation, evolution and termination are seriously underresearched (Parkhe, 1993; Doz, 1996; Yan and Zeng, 1999; Noorderhaven, 2000).

This paper aims to provide a conceptual model and a set of propositions that can guide empirical research into the dynamics of interfirm alliances. Building on earlier conceptual (e.g., Parkhe, 1993; Ring and Van de Ven, 1994) and empirical (e.g., Doz, 1996; Arino and De la Torre, 1998) work we propose a process model of strategic alliances. The model is based on the two theoretical approaches most often used in alliance research, *transaction cost economics* and *resource-based theory*. Both theories tend to emphasize the initial conditions of the alliance, in terms of governance structure and in terms of the resources brought into the alliance by the partners. However, elements of both theories can also be used to construct a more dynamic view of alliances. In doing so, we essentially work towards a theory of the building bricks of inter-firm networks.

The paper is organized as follows. Section 2 discusses applications of transaction cost economics and resource-based theory to strategic alliances, focusing on giving an account of the most important structural elements of alliances according to these two approaches. Section 3 focuses on the process aspect of alliances, and tries to answer the question, based on our present knowledge of strategic alliances, as to which factors may be assumed to influence the quality of the relationship between the partners. A conceptual model combining structural and processual elements is proposed, and propositions are developed based on the model. The final section concludes the discussion.

2. Transaction Costs, Resources, and Strategic Alliances

The formation of strategic alliances and their operation has been accounted for by different theories, like transaction cost economics (*e.g.*, Williamson, 1985; Hennart, 1988), resource-based theory (*e.g.*, Tsang, 2000; Das and Teng, 2000), game theory (*e.g.*, Parkhe, 1993); social exchange theory (*e.g.*, Axelrod, 1984), and inter-organizational learning theory (*e.g.*, Hamel, 1991; Parkhe, 1991; Makhija and Ganesh, 1997). This paper draws on transaction cost economics (TCE) and resource-based theory (RBT).

Transaction Cost Economics

The TCE view focuses primarily on the management of transactions in an efficient manner through minimising transaction costs, under the assumptions of bounded rationality and opportunism (Williamson, 1985). TCE puts forth that opportunistic firms may abuse the uncertainty that results from incomplete specification of obligations, and that, anticipating this, firms will try to craft safeguards against such opportunistic behaviour. These safeguards tend to be costly and incomplete. Various authors have questioned and criticised the

opportunism assumption as applied in TCE (Chiles and McMackin, 1996; Ghoshal and Moran, 1996). Other researchers have opined that although the existence of opportunism is a fact of life, so are trust, reciprocity and commitment (*e.g.*, Parkhe, 1993 ; Gulati, 1995, Noorderhaven, 1996). Gulati (1995) argues that trust counteracts fears of opportunistic behaviour and as a result is likely to limit the transaction costs associated with an exchange. Though trust checks opportunistic behaviour, trust building becomes difficult when large corporate distances have to be bridged, like in the co-operation between two companies with different organizational cultures and possibly coming from different national cultures (Olk, 1997; Park and Ungson, 1997; Simonin, 1999). Taking these phenomena into account is necessary for a satisfactory view of alliance process.

Our contention is that corporate distance arises due to differences in national and corporate culture of the concerned partners. In some cultures, problems are actively solved by taking up deliberate actions, while in other cultures conflicts are accepted as preordained situations and no actions are taken (*cf.* Moran and Harris, 1982). Hence, it is important to understand the behavioural differences of partners to narrow the corporate distance. For example, one of the main reasons for the failure of the AT&T-Olivetti alliance was the inadequate attention given to the understanding of behavioural patterns of the partners (*cf.* Wysocki, 1990). Corporate culture is often embedded in the partners' societal and national cultures, as is clear from the phrases "European family capitalism", "American managerial capitalism", and "Japanese group capitalism" (Parkhe, 1991). The cultural differences may create ambiguities in the relationship leading to conflict and even termination of the alliance (Woodcock and Geringer, 1991; Barkema et al., 1996). Hence, as the relationship evolves, it is important that corporate distance should be narrowed down in order to create a conducive atmosphere for trust generation.

However, scholars give evidence of divergent views on the link between corporate distance and performance. Some researchers opine that differences in national culture have an important bearing on performance. Others, like Harrigan (1988), argue that similarity of corporate culture between partners is even more important to alliance success than similarity in their national culture. She states, for example, that “GM’s values may be more similar” to those of its alliance partner, “Toyota, than to those of Ford” (Parkhe, 1991: 588). Hence, it is not clear from extant literature as to which element of corporate distance actually determines the success of the alliance.

Resource-Based Theory

RBT considers firms as a bundle of resources, and alliances as combinations of resource bundles, and stresses the efficient management of resources in order to attain competitive advantage and to appropriate the resulting rents (Peteraf, 1993). Although firms are aware that by combining their resources with those of other firms they can realise collaboration-specific rents, the characteristics of the firms in terms of resources are not transparent as they enter into an alliance. Because of bounded rationality, it is not always clear ex ante whether collaboration-specific rents are potentially present. Hence, the terms of collaboration cannot be completely specified ex-ante.

Transparency of resources has important implications given the strategic alignment of the alliance partners, which in turn has a bearing on the success of the alliance. Partner strategies are very similar when alliances are set up to take advantage of scale economies (Buckley and Casson, 1988; Hennart, 1988), that is, partners enter into an alliance in order to supplement their existing capabilities. The goals of partners in these types of alliances are similar, leading to convergence of their strategies. Strategies of partners are more likely to

become divergent when they come together to exploit complementary capabilities (Hennart and Zeng, 1997).

However, there has been disagreement among researchers concerning the effect of convergent and divergent strategies on the success of alliances. On the one hand, alliances formed to exploit scale economies are found to be stable (Stuckey, 1983), that is, they experience fewer conflicts arising due to divergence of strategies. On the other hand, alliances between firms that come to exploit complementary capabilities are found to be more successful than firms that come to exploit supplementary capabilities (Bleeke and Ernst, 1991; Park and Russo, 1996). That is, when strategies are divergent, it is less likely that firms become competitors in the future. For example, Philips and DuPont are great partners in developing compact discs, but they are not competitors as Philips is not interested in plastics and DuPont is not into recorded music (*cf.* Hamel, 1991). However, Hill & Hellriegel (1994) found complementarity to have a negative impact on alliance success. Hence, it is unclear whether convergent or divergent strategies are responsible for the success of alliances.

TCE and RBT Combined

Researchers have recognized the complementarity of the TCE and RBT approaches (Conner and Prahalad, 1996), as they argue that the relationship between organizations in an alliance is not simply a governance structure of a hybrid nature but more importantly a productive resource for value creation and realization (Madhok and Tallman, 1998; Tsang, 2000). Both TCE and RBT assume bounded rationality, but with and without opportunism, respectively (Conner and Prahalad, 1996). Firms enter into alliances to exploit their irreducible knowledge differences (Conner and Prahalad, 1996), but efficient management of their resources is problematic due to bounded rationality. TCE emphasises that firms not only

experience knowledge differences, but also have to safeguard themselves to the possibility of opportunistic behaviour by their partner, the tendency to which is difficult to detect ex ante.

RBT applied to strategic alliances (sometimes referred to as the *relational view*) introduces the concept of *relational rents*, advantages that a firm cannot enjoy in isolation (Dyer & Singh, 1998). Madhok and Tallman (1998) identify three types of relational rents: the firm-specific quasi-rents central to RBT, transaction-specific quasi-rents central to TCE, and collaboration-specific quasi-rents specific to the alliance. This third type of quasi-rents arises from the combination of transaction-specific and firm-specific resources of both the firms into a synergistic bundle which allows for a level of accomplishment of objectives that the firms would not have been able to achieve on their own.

However, economising on safeguards through improved trust is possible only when the true nature of the parties is sufficiently transparent. This may also lead to identification of new opportunities for collaboration-specific rents, as resource bundles become more transparent. Increased transparency with respect to the resources and the behaviour of partners is possible only through intensive interaction within the alliance (Hamel, 1991; Gulati and Gargiulo, 1999; Seristö and Vaara, 1999; Arino and Doz, 2000). If intensive interaction leads to more transparency, with regard to opportunism as with regard to resource bases, it is clear that the processes of interaction within and around a strategic alliance may over time alter the initial structural conditions, or at least the partners' perception of these. However, existing studies pay considerable attention to the initial conditions and early formative stages of alliances, but very little to the subsequent processes, which may alter these conditions.

Previous studies have examined the rationale for alliances (Contractor and Lorange, 1988), the reasons and motives for alliances (Hamel, 1991; Osborn and Hagedoorn, 1997; Spekman et al., 1998), and appropriate partner selection characteristics and control structures

(Tomlinson, 1970; Geringer, 1991; Parkhe, 1993). With the predominant use of the transaction cost framework, scholars have studied the choice of alliances as governance mechanisms compared to other forms (Hennart, 1988; Buckley and Casson, 1988; Balakrishnan and Koza, 1993; Hennart and Reddy, 1997), sometimes leading to guidelines for better management (Das and Teng, 1997).

This stream of research gives insights into the structuring of alliances but fails to throw light on the ex post maintenance of relationships. Prior studies have directly related the initial characteristics of alliances to their outcomes (*e.g.*, Burgers et al., 1993; Hagedoorn & Shakenraad, 1994). But, as pointed out earlier in this paper, the findings of these studies exhibit inconsistencies. This should come as no surprise, as – given the bounded rationality assumption – alliance partners should be expected to have difficulties with specifying all the needed contracts ex ante. It is at this juncture that the importance of *process* comes to play. During the interaction process within the alliance, partners learn about each other, and may adapt the structural conditions of the alliance if this is seen as necessary, or may decide to terminate it.

The desirability of a shift in focus from the static to the dynamic aspects of inter-organizational relationships has been recognized by researchers. Ring and Van de Ven (1994: 91) note that “relatively little scholarly attention has been devoted to studying developmental processes of inter organizational relationships. Instead, most of the research to date has been focussed either on the antecedent conditions or the structural properties of interorganizational relationships in comparison with other governance forms”. Some scholars have undertaken research on the dynamic process aspects of alliances (*e.g.*, Zajac and Olsen, 1993; Madhok, 1995; Kumar and Nti, 1998), but only a few have clinically examined the evolutionary process of alliances (*e.g.*, Doz, 1996; Arino and de la Torre, 1998). Ring and Van de Ven (1994) introduce a process framework that focuses on formal and informal social

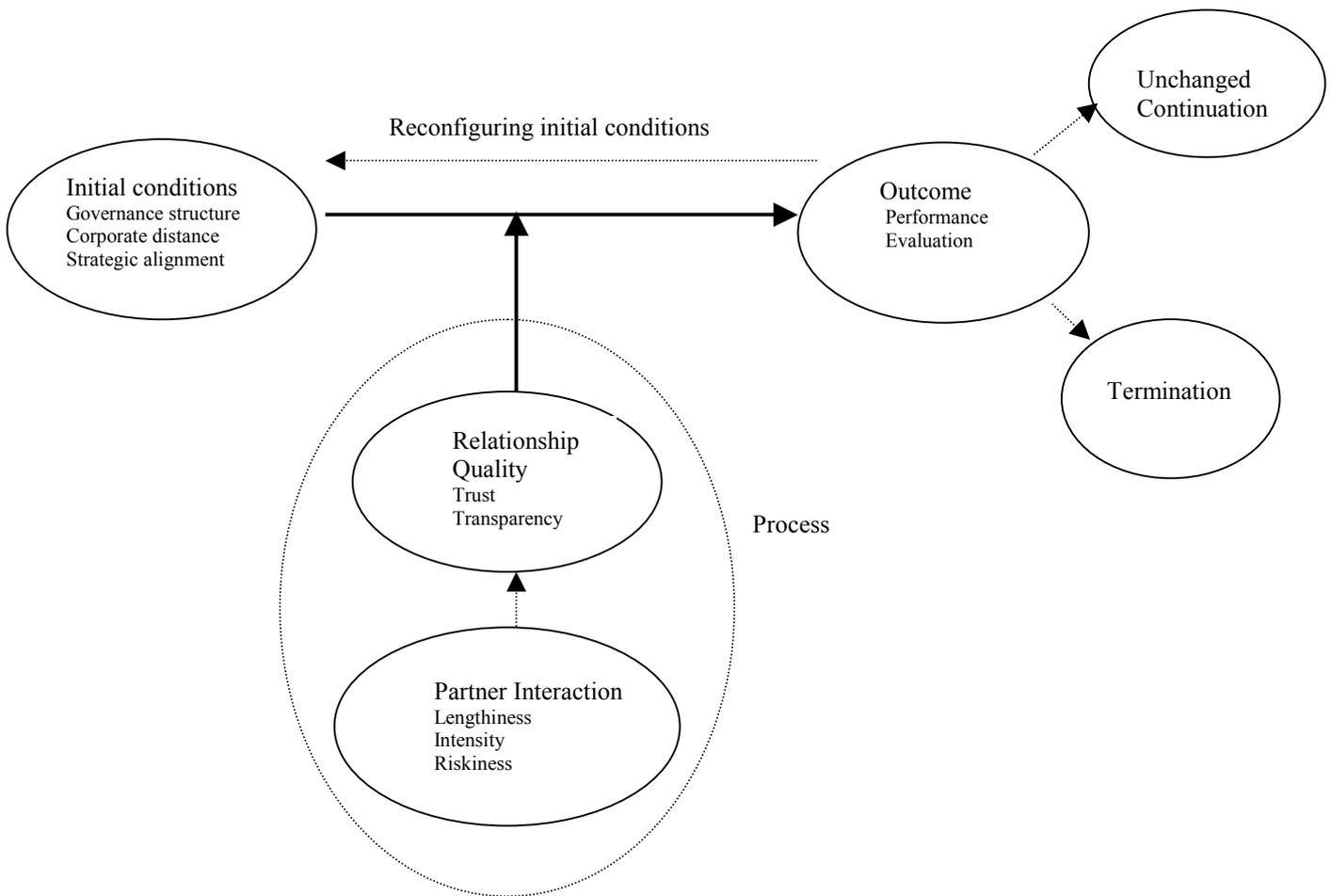
psychological processes by which organizational parties jointly negotiate, commit to and execute their relationship. Doz (1996) analyses the contributions of initial conditions and of learning processes to outcomes of strategic alliances. The alliance processes as emanating from the writings of these researchers are not linear but circular in nature, containing feedback loops (*e.g.*, Doz, 1996).

Though it is encouraging to note that the focus is shifting towards the process aspects of alliances, as yet studies taking this perspective are but few and fragmented. The advantage of clinical approaches is that they trace an alliance throughout its lifecycle, but it is difficult to generalise the results to a larger population. On the other hand, “number-crunching” studies like those linking initial conditions directly to outcomes enable generalization to large populations but fail to capture the subtler process aspects. There is a lack of large-scale studies that in a consistent way take process characteristics into account. In the next section we will present a testable conceptual model based on TCE and RBT that enables the development of propositions linking structural conditions to outcomes through process. Partner interaction is taken to have a bearing on the level of trust between the partners and transparency of partner resources. Outcomes depend on initial conditions *and* on the way in which partner interaction affects trust and transparency.

3. A Process Model of Strategic Alliances

The model (see Figure 1) links alliance outcomes to initial conditions, as usual in alliance research, but adds the mediating effect of process. Before proceeding to the formulation of research propositions based on the model, we will discuss its elements.

FIGURE 1: PROCESS MODEL OF INTERFIRM ALLIANCES



Initial Conditions

We distinguish three important aspects of the initial conditions of an alliance: the governance structure, the initial corporate distance, and the extent to which the strategies of the partners are aligned.

With regard to the *governance structure* the point can be made that although TCE assumes that partners will try to install sufficient safeguards to counteract opportunistic behaviour (cf. Doz, Hamel and Prahalad, 1989), e.g., in the form of contracts covering as many contingencies as possible, this strategy can easily backfire. Under many conditions a

loose governance structure may be better, because this offers the possibility for the alliance to develop over time. This is crucial, as the knowledge of each other and of the environment will initially be far from perfect. Hence a too tight governance structure will function like a straightjacket, impeding later adaptations to the alliance structure. Obviously, the tightness of the governance structure should also be seen in relation to the aim and scope of the alliance. Gulati and Singh (1998) assert that the alliance partners craft their governance structure around anticipated co-ordination costs and expected appropriation concerns. A tight governance structure involves stringent contracts with standard operating procedures. At a given level of involvement and anticipated co-ordination concerns and appropriation risk, partners will adopt a relatively loose governance structure when they are familiar with each other and consider each other trustworthy (Gulati, 1995). As a senior manager at a computer software firm said, “in our subsequent alliances we don’t bother to write detailed contracts. That would not only be tedious but also an insult to our relationship” (Gulati, 1995: 95).

Several authors have constructed scales measuring (elements of) the loose-tight governance continuum. John (1984) used two items for a scale of the controls in a marketing channel relationship. The extent to which controls are present can be seen as a proxy of tight governance. Provan and Skinner (1989) distinguish two kinds of control: formalization and centralization, each measured by a separate series of items. Noorderhaven, Nooteboom and Berger (1998) used perceptions of the degree of legal ordering. However, in order to avoid “perceptual distortion” (Skinner and Gultiman, 1985) in measuring control or government tightness, as well as to avoid common method bias, it is to be preferred to use non-perceptual measures of governance tightness. One way of doing this would be to look at the presence of “hierarchical elements” (Stinchcombe, 1986) in alliance contracts, and rank alliances on their governance tightness in this respect. As far as noncontractual elements of governance

structures are concerned, the presence of various types of arrangements, like co-financing of certain assets can be looked at (Nooteboom, Berger and Noorderhaven 1997).

The second element of the initial conditions is the *initial corporate distance*. As discussed above, partners in an alliance will have to bridge the differences between their firms stemming from, say, differences in organizational and national culture. Since corporate distance leads to ambiguity (Simonin, 1999), it is important that partners work towards bridging it and facilitate trust generation, as discussed in section 2 of this paper. A certain corporate distance will always exist, and this can even be seen as a condition for forming a fruitful alliance: only if the partners are different in some way, they can provide important and complementary inputs (Nooteboom, 1999). However, a smaller corporate distance facilitates co-operation and may be assumed to be related to better outcomes, whereas a larger corporate distance may be associated with a higher risk of termination. Corporate distance will doubtlessly not be entirely unrelated to the tightness of governance, since a smaller corporate distance - in particular if this is the result of previous interactions (see below) - may make it easier for partners to use a loose governance structure. Large corporate distance is associated with great differences in national culture, as well as in business practices and operational mechanisms of the partners (Simonin, 1999).

Cultural distance has often been calculated using scores on Hofstede's (1980; 1991) well-known indices (see, e.g., Kogut and Singh, 1988). Simonin (1999) used two questionnaire items to measure cultural distance as perceived by respondents, and two other items to measure perceived organizational distance. In order to avoid common method bias it is preferable, however, to use non-perceptual data for measuring corporate distance (perceptual data are to be used in measuring *relationship quality* and *performance evaluation*, see below).

The third element of the initial conditions in the model is the *strategic alignment* of the partners. If the partners share the same strategic intent, i.e., if there is strong strategic alignment, this will ceteris paribus lead to better outcomes. If they have different strategies (e.g., one wants to learn from the other and then exit, the other wants to build a lasting relationship) this will lead to instability and hence on average poorer outcomes. Strong strategic alignment between the partners brings about mutual advantage through the resulting behavioural and resource transparency. Prior researchers have explained strategies in terms of supplementing existing partner capabilities (Hennart, 1988) and exploiting complementary partner capabilities (Hennart and Zeng, 1997). And the results as explained in section 2 remain inconsistent. We contend that, more than complementing or supplementing partner capabilities, for a strong strategic alignment, alliance partners should understand and agree with each other's motives. Of course, changes in the strategic alignment may be induced by exogenous shifts (cf. Arino and De la Torre, 1998). Hence empirical research will have to control for such exogenous shifts as far as possible. Of course, the objectives of the partners can shift over time, but in the context of our model the important thing is the strategic alignment at the outset. The most important issue will probably be whether one of the parties sees the alliance primarily as a vehicle for learning (and hence as a temporary) while the other sees it as an effective organizational solution (and hence of indefinite lifetime).

Alliance Outcomes

We think that alliance outcomes should be seen through the eyes of the partners. In some of the prior research satisfaction of the partners has been measured in terms of the alliance meeting the expectations of the individual firms (e.g., Killing, 1983; Beamish, 1984). In a study conducted by Geringer and Herbert (1991), a survival-based objective measure was found to have the strongest correlation with a subjective measure of performance. This shows

that the alliance performance evaluated by the partners as satisfying were more likely to survive than the ones that were evaluated by the partners as less satisfactory. Depending on their evaluation, partners may opt for one of three actions: they may continue the relationship without (major) alterations, they may reconfigure the initial conditions, or they may terminate the alliance (cf. Dussauge, Garette and Mitchell, 2000, who distinguish a fourth possibility, “take-over”, that is subsumed under termination in our model). Unchanged continuation will be associated with a positive evaluation by both partners. When the outcome is a high level of satisfaction between the partners, the relationship may evolve into a "multipoint relationship" (Gomes-Casseres, 1996), that is, the partners might get themselves involved in new projects. If this is the case the scope of the relationship may said to have been extended. If the scale of the existing relationship is extended substantially, this may or may not be accompanied by an adaptation of the governance structure. If the upscaling takes place in an incremental way the partners may very well not bother to adapt the original contract. In case of a more discrete change in scale, adaptation of the governance structure is much more likely (cf. Noorderhaven, 1995).

Whether restructuring or termination is opted for will not only depend on the degree of dissatisfaction of the individual partners, but also on the degree of correspondence between their evaluations, and the capacity in the alliance to resolve conflicts and reconfigure the relationship (Arino and De la Torre, 1998). Our contention is that all three aspects of outcome evaluation will be strongly influenced by the process of partner interaction within the alliance.

Interaction Process

In our process model, the process mediates between the initial conditions and alliance outcomes. Prior studies on alliances have adopted the transaction cost economics way of

treating each alliance as discrete independent exchanges where partners are not concerned with the impact of the transaction on future exchanges (Doz & Prahalad, 1991; Khanna, 1998; Arino et al., 1998). This approach fails to take into account the relationship that evolves between the alliance partners with each transaction. In a study conducted by Gulati, one of the executives in charge of alliances for his firm emphasised this point: “We originally initiated technology partnerships with a number of key industry players in the mid-1980s. These in turn led to numerous repeated alliances with the same set of firms” (Gulati, 1993:84).

Partners place high value on future benefits from the alliance, and these future benefits include pay-off which are internal to the alliance as well as the potential reputation that comes with good behaviour, which is external to the alliance. This affects the partner interaction that is the essential component of the process dynamics of alliances. Partner interaction affects both the level of *trust* and the *transparency* in the relationship. Trust mitigates fear of opportunistic behaviour and is likely to limit the transaction cost associated with an exchange (Gulati, 1995). The initial conditions of an alliance will normally be characterised by fragile trust (Ring, 1996). Ring (1996: 152) defines fragile trust as “a type [of trust] that permits economic actors to deal with each other, but in guarded ways”. The fragile trust that is derived from the initial conditions will subsequently be influenced by the nature of interactions between the partners as their relationship evolves (Zajac and Olsen, 1993; Ring, 1996; Arino and De la Torre, 1998). Whether the trust in the relationship will become stronger to the point that it can be characterised as "resilient" trust (Ring, 1996) or the fragile trust will further deteriorate depends on processual aspects rather than on the initial conditions.

The degree of transparency in an alliance depends among other things on how encodable the relevant knowledge resources are. Explicit knowledge is more encodable than

tacit knowledge (Hamel, 1991). But it also depends on the way in which the partners interact. Poor partner interaction will not lead to greater transparency. In a study conducted by Hamel one project manager emphasised this: “Everyone I met with [our partner] seemed to operate with well defined limits on what they would tell us. Their engineers were very guarded with technical details. Sometimes I had to appeal to higher level managers to get information critical to project success” (Hamel, 1991: 96). Transparency clearly has an important bearing on alliance outcome. A higher degree of resource transparency among partners facilitates better understanding, leading to more positive outcomes.

Our model suggests that the level of trust and transparency mediate the relationship between initial conditions and alliance outcomes. Below we will formulate propositions concerning these effects. But first we will have to ask ourselves the question how trust and transparency are in turn influenced by process characteristics; otherwise these dimensions could be taken as exogenous variables. Doubtlessly many factors influence the build-up or breakdown of trust and the increase or decrease in transparency. These factors may be external to the relationship as well as internal. Here we concentrate on the internal factors, and we focus on the characteristics of the interaction process.

In considering the impact of interaction processes on the build-up of trust, Noorderhaven (1996) argues that the lengthiness, intensity, and riskiness of the partner interaction are important. The *lengthiness* of the interaction is important because trust is built up gradually (Ring and Van de Ven, 1992, 1994). Since trust develops through an iterative mutually reinforcing process, the time dimension of the interaction is crucial (Murakami and Rohlen, 1992; Ring and Van de Ven, 1992, 1994; Dyer and Chu, 2000). The advantage of building trust slowly is that it stresses the importance of starting each relationship in small, specific steps as the partners would then learn about each other gradually (Parkhe, 1998). Of course, how long it will take for higher levels of trust or more "resilient" trust to form

depends not only on the passing of time, but also on the frequency of the contact between the partners (Heide and Miner, 1992). Parkhe (1998) also further stresses that trust building should be understood in relation to "industry based time" and not clock time as different industries have different concepts of time. With time, the details regarding existing resources of the partners and the combined development of new resources will also become transparent. For example, Texas instruments Inc. and Hitachi Ltd. started slowly in 1988, with joint research to develop memory chips. By 1996, the two companies had highly deepened their relationship, jointly funding a 500 million dollars chip plant near Dallas (Parkhe, 1998).

The *intensity* of the interaction process refers to the level of communication, and the degree of whole person involvement (Noorderhaven, 1996; Dyer and Chu, 2000). This in turn depends to a great extent on the partner interface (Doz, 1996). The boundary spanners (Gulati, 1998) work towards creation of a partner interface conducive to positive partner interaction. They create an environment of trust and enhance transparency. Parkhe (1998: 431) argues that "they act as a shuttle between partners, creating relationships, reminding their own team to focus on the big picture, and explaining opposing view points". In the case of the transdermal patches project between Ciba Geigy and Alza, the development of interpersonal relationships allowed them to build an informal interface leading to the success of the project, but the oral slow release pills project between the same parents failed due to inefficient boundary spanning (see Doz, 1996).

The *riskiness* of the interaction is also important, because if the other party has the opportunity to defect, but refrains from doing so, this is a powerful booster of trust (Noorderhaven, 1996). Refraining from defection, apart from boosting trust, brings the partners closer to each other which allows for more transparency with regard to resources. This may lead to the realization that novel combinations of resources, not anticipated in the initial alliance agreement, are feasible. Honeywell's relationship with Yamatake-Honeywell

strengthened when Yamatake's owners displayed their sincerity to Honeywell in the early 1950s with a detailed accounting of the licence fees they thought they owed because of their use of Honeywell technology (see Gomes-Casseres, 1996). Roehl and Truitt (1987) make a comparable point when they state that "stormy open marriages are better". The fact that the partners do have the possibility to terminate the relationship and in fact explore other opportunities makes sure that the alliance "develops the necessary sophistication and resilience" (Roehl and Truitt, 1987: 88).

Riskiness is influenced by uncertainty, that is, uncertainty regarding future states of nature and how partners will react to such uncertainties (Arino and De la Torre, 1998). This uncertainty regarding future states of nature will be resolved only through interaction and events and the way the partners react to the events. An event is "a critical incident when parties engage in actions related to the development of their relationship" (cf. Ring and Van de Ven, 1994: 112). It can either be a change in the strategies of the partners or a change in the environment. By events we mean unfavourable events and not favourable events because the latter will naturally be conducive to the relationship and the trustworthiness of the partners cannot be put to test. In the case of GE-SNECMA (a collaboration between General Electric and SNECMA in the civilian jet engine business), the unanticipated slow growth of the market due to the oil crisis was well taken by both the parties leading to a robust growth of the alliance. GE-SNECMA continues to be an oft-quoted example of a successful alliance even now. But, in the NAMCO-Hexagon case, a 50/50 JV between American and European firms, the negative reaction by partners to critical incidents ultimately led to the dissolution of the joint venture (see Arino and De la Torre, 1998).

Moreover, the three dimensions of interaction are interrelated. Riskiness of the interaction is clearly related to the intensity of the interaction and the duration dimension. With time, the intensity of interaction exposes the partners to each other's reactions to certain

critical incidents occurring in the relationship. Through these interactions the partners may either become more tolerant of minor deviations from their expectations by resolving their conflicts and strengthening their relationship (e.g., GE-SNECMA case), or withhold resources unilaterally thereby pushing the alliance to failure in the long run (e.g., NAMCO-HEXAGON case) (Arino, De la Torre and Ring, 1998). In the case of the former the fragile trust that characterised the relationship transforms itself into resilient trust but in the latter case the relationship is characterised by further deterioration of the initial level of fragile trust. Beyond these examples, in a survey of executives involved in strategic alliances Parkhe (1993) found that long time horizons, frequent interactions, and high behavioural transparency reduced opportunistic behaviours between partners and improved alliance performance.

Propositions

Our propositions based on the model and the discussion above pertain to the interaction of initial conditions, process characteristics, and outcomes. These propositions concentrate on the relationships that are symbolized by solid arrows in Figure 1. The relationships indicated by dotted arrows (i.e., the relationships between outcome satisfaction and continuation, reconfiguration and termination, and the relationships between the duration, intensity and riskiness of the interaction and the level of trust and the degree of transparency) are assumed but not subject to propositions in this paper.

The various dimensions of the set of initial conditions are assumed to affect the evaluation of the performance of the alliance by the partners, but this effect is assumed to be mediated by the degree of trust and transparency. We expect trust and transparency to have parallel effects in many instances (but not always), and, as discussed above, they are also largely produced by the same processes. However, conceptually trust and transparency are clearly distinct, and as empirical constructs they can probably also be separated in a

satisfactory way. Trust is measured by asking questions about the perceived intentions of the other party (for operationalizations, see, e.g., Anderson and Narus, 1990; Morgan and Hunt, 1994; an – adapted - version of Butler’s 1991 instrument can also be used). Transparency can be measured by asking questions about how well one partner knows the other, or how easy information is accessible (Simonin, 1999, used some items which come close, but focus on the deliberate secretiveness of partners. Our concept of transparency also includes involuntary barriers to the flow of information, e.g., stemming from incompatible organizational routines).

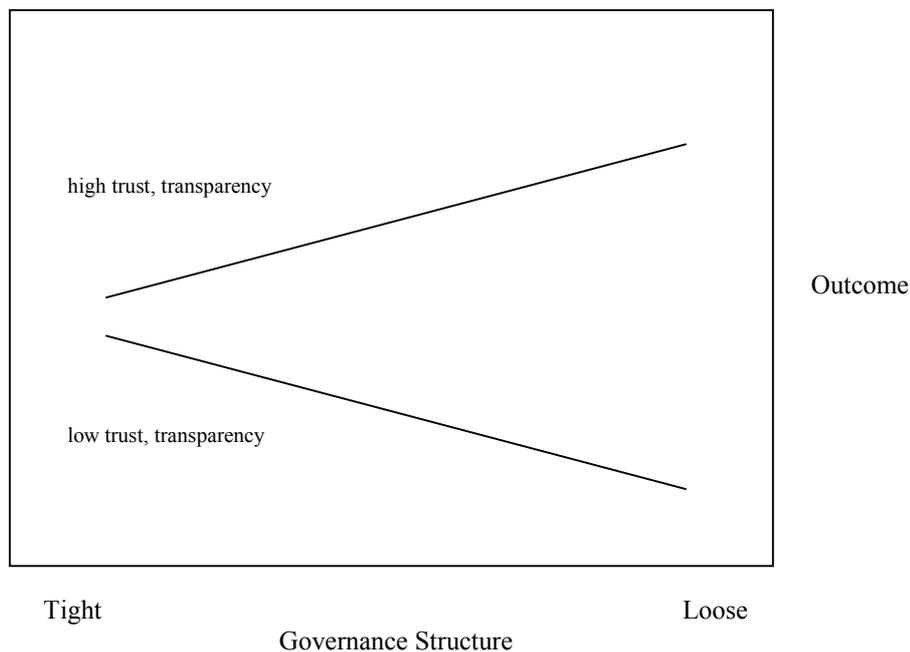
The first proposition pertains to the effect of the tightness of the governance structure on the evaluated performance of the alliance, mediated by trust and transparency. For reasons described above, we believe that a loose governance structure better enables the alliance to adapt to unforeseen and changing circumstances, and to reap benefits that were not anticipated at the outset. However, loose governance structures are also vulnerable to opportunistic exploitation. And the extent to which partners are able to make use of the flexibility offered by a loose governance structure depends on how transparent their resource bases are to each other. Hence, we propose that loose governance yields better results if high trust and transparency are produced by the interaction process, but under the opposite conditions it is better to have strict governance. If there is tight governance, however, we expect only marginally better results under conditions of high trust and transparency than under conditions of low trust and transparency, because the structure of the relationship offers little leeway to realise additional benefits. Hence proposition 1:

Proposition 1: Loose governance will yield better results than tight governance if high trust and transparency are produced by the interaction process; under conditions of

low trust and transparency tight governance yields better results than loose governance.

Proposition 1 is illustrated graphically in Figure 2.

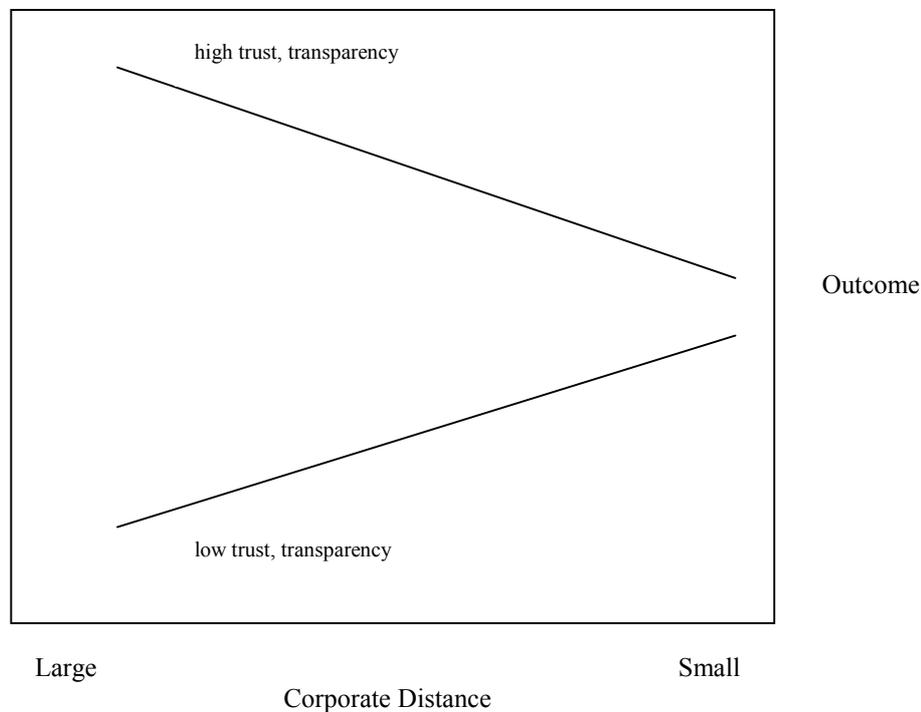
FIGURE 2: GOVERNANCE STRUCTURE, TRUST/TRANSPARENCY, AND OUTCOME



The second proposition pertains to corporate distance. If the corporate distance is small at the outset, the trust and transparency produced in the interaction process will make relatively little difference, although even here we expect better results than with low trust and transparency. But the advantages of trust and transparency resulting from the interaction are strongest if the initial corporate distance was large. In this kind of alliances we expect substantial performance differences between alliances with an interaction process conducive to the production of trust and transparency and alliances lacking such an interaction process. This expectation is captured in proposition 2 (illustrated in Figure 3):

Proposition 2: High trust and transparency produced by the interaction process lead to significantly better outcomes if the initial corporate distance was large; if the initial corporate distance was small, high trust and transparency producing interaction processes do not lead to better results than low trust and transparency producing processes.

FIGURE 3: CORPORATE DISTANCE, TRUST/TRANSPARENCY, AND OUTCOME

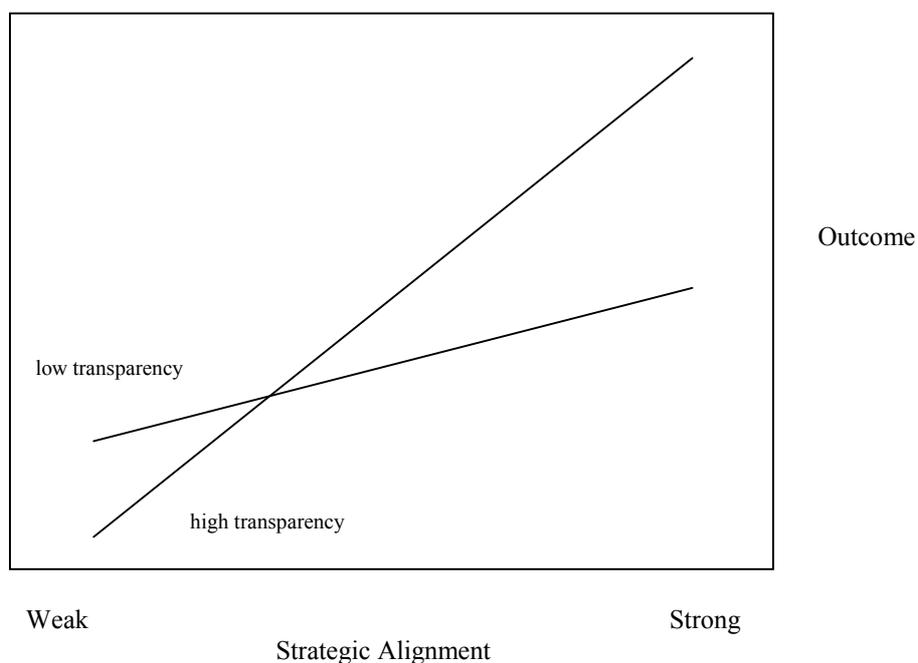


For the third dimension of the initial conditions distinguished in this paper, strategic alignment, we expect a differential impact of trust and transparency. If there is weak strategic alignment, transparency-yielding interaction processes will only make this lack of alignment more obvious, rendering termination of the alliance more likely. If there is strong strategic alignment, increased transparency will not drive the partners apart, but will to the contrary reveal additional areas of mutual benefit, causing the alliance to prosper. If the interaction

process helps little to increase the transparency, the negative outcomes described above for the condition of high transparency can to a certain extent be avoided, making the alliance fare somewhat better, but on the other hand low transparency makes it more difficult to reap the benefits of strong alignment. (Illustrated in figure 4).

Proposition 3: High transparency produced by the interaction process leads to poor outcomes if the strategic alignment is weak, and to better outcomes if the strategic alignment is strong; low transparency producing processes yield marginally better results than high transparency processes if the strategic alignment is weak, but to worse outcomes if the strategic alignment is strong.

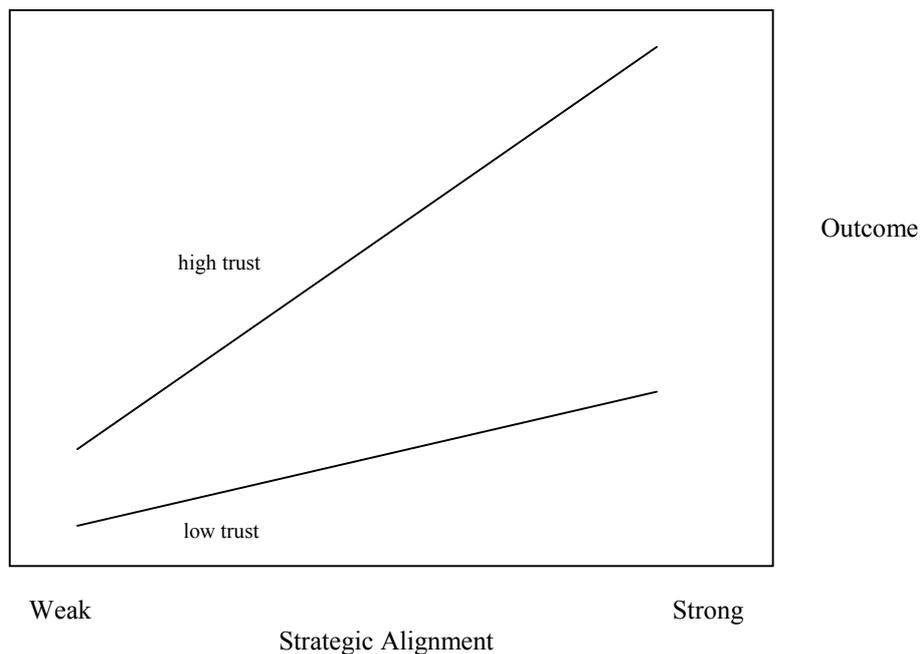
FIGURE 4: STRATEGIC ALIGNMENT, TRANSPARENCY, AND OUTCOME



Finally, considering the effect of trust-producing interaction processes, we expect little difference between outcomes of alliances for high-trust producing interaction processes and low-trust producing processes if the strategic alignment is weak. Even if high trust is produced, the lack of strategic alignment makes it unlikely that the partners will be able to benefit substantially from this trust. However, we may assume that the outcomes of these alliances are better than in case of low-trust producing alliances. These differences in outcomes under high and low trust conditions become larger if the strategic alignment is strong, however. Alliances in which the interaction process produces high trust levels will be much better able to reap the benefits of this strategic alignment than low-trust alliances. This is reflected in proposition 4 (Figure 5):

Proposition 4: High trust producing interaction processes lead to better outcomes than low-trust producing outcomes; this difference between high and low trust will be stronger when there is strong strategic alignment than when there is weak strategic alignment.

FIGURE 5: STRATEGIC ALIGNMENT, TRUST, AND OUTCOME



4. Conclusion

In this paper we have worked towards bridging a specific gap in the alliance literature. This is in line with Yan & Zeng's (1999) call to probe into the dynamic process aspects of alliances. Firstly, we emphasized the need for a process view of alliances by revealing the static nature and inconsistencies in prior research on alliances. Secondly, we proposed a process model on the basis of TCE and RBT approaches that leads to a number of relevant propositions. The propositions clearly call for an empirical study using a survey procedure with top-level alliance executives and the manager of the human resources department. The nature of the constructs, especially the process elements, makes it highly unlikely that secondary data with sufficient validity can be accessed. Operationalization of the initial conditions can be undertaken by assigning appropriate proxies. The measure for process elements (i.e., trust and transparency) can be several Likert-type items asking respondents the degree to which the interaction process has (positively) influenced perceived trust and transparency within the alliance. And finally, the operationalization of performance evaluation can either be carried out by way of assigning proxies or by directly questioning the respondents.

For the study of industrial networks the relevance of this paper lies in the "endogenous dynamic between organizational action and network structure that drives the emergence of interorganizational networks" (Gulati and Gargiulo, 1999: 1439). Network theories have tended to focus on the way in which network structures influence the behaviour of embedded firms. But, of course, it was the actions of these firms that in the first place gave rise to the network. Large networks are rarely formed by design (an exception are, e.g., consortia set up in order to push industry standards, see Vanheverbeke and Noorderhaven, forthcoming). Firms typically start co-operating with a small number of other firms. Only

gradually, and depending on the experiences in these alliances, the bonds between firms are enforced, and extended to other firms. In this way a network gradually grows as a function of the processes taking place within the alliances forming it. An understanding of these building bricks - what gives them strength and what keeps them together - is essential for a better understanding of networks.

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