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**TRANSACTIONS COSTS, INNOVATION AND LEARNING**

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# TRANSACTION COSTS, INNOVATION AND LEARNING<sup>1</sup>

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## Introduction

This chapter discusses inter-organizational relationships (IOR's) from the perspective of innovation and learning. In such relations, transaction costs play an important role, but they need to be reconsidered from the perspective of learning.

IOR's are not new. They go back at least as far as Adam Smith's argument for division of labour between firms, for the sake of productive efficiencies of specialization. Such specialization in firms by definition entails relations between firms, in outsourcing and collaboration. Renewed interest in IOR's is due to recent developments in technology and markets. In technology, there is fast development and proliferation of novel opportunities, e.g. in information- and communication technology (ICT), micro-mechanics, optics, sensors, their combination in robotization, biotechnology, new materials and surface technologies. In markets, there is renewed globalization<sup>2</sup>, partly as a result of new opportunities offered by ICT, for market entry and for coordinating activities across markets and organizations. As noted by Adam Smith, the extent of specialization and economy of scale is limited by the size of the market. Market extension by globalization thus furthers specialization and its consequent relations between firms. Furthermore, as a result of emerging complexity and rapid change of markets and technology, competition has increasingly become a 'race to the market' with new or improved products. To have any chance of winning such races, one needs to shed activities, as much as strategically possible, that are not part of the 'core competencies' (Prahalad and Hamel 1990) that constitute competitive advantage. Other, complementary competencies must then be sought from outside partners. Such outside sourcing also maximizes the flexibility in configurations of activities that is needed under rapid change. For example, in order to reduce development times of new products and to reduce risks of maladjustment to customer needs, suppliers should be brought in as a partner in developing and launching a new product.

The sourcing decision -what to make and what to buy- is a special case of the more general decision what to do inside one's own organization, and what to do outside, in collaboration with other organizations. Sourcing entails vertical collaboration, in the supply chain, including marketing and distribution. Relations may also be horizontal, with competitors, or lateral, with firms in other industries. Next to the question *what* to do inside or outside, and *why*, there are the questions *with whom* to collaborate, and *how*: in what *forms of organization*, in what *networks*, with what *instruments for governance*, and in what kind of *process*.

In this chapter, it is not possible to address all these questions, and there is no need to duplicate the large literature on the subject of IOR's (for a recent, integrated account, see Nootboom 2004). This chapter focuses on one aspect that is still ill-developed in the literature: the combination of innovation and transaction costs. This chapter discusses the theoretical consequences of including innovation and learning, and implications for the boundaries of the firm, in particular for the choice between integration in a firm and alliances between firms, and for instruments for governing relational risk.

Transaction cost economics (TCE) needs to be modified and extended, since it offers at best comparative statics, and by its own admission (Williamson 1985: 143, 1999: 1103) does not, in its

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<sup>1</sup> Parts of the text of this chapter were taken from Nootboom (1999, 2003, 2004).

<sup>2</sup> Renewed, i.e. after the globalization that occurred in pre-WW1 imperialism.

established form, incorporate innovation and learning. This chapter combines a perspective of dynamic competencies, in learning and innovation, and a governance perspective, in the management of relational risk. While TCE neglects the competence side, studies of competence often neglect the governance side. For that, TCE still offers important insights in some causes and effects of relational risk (i.e. 'hold-up risk'), and instruments for their governance.

The competence perspective goes back to the work of Edith Penrose (1959). It emphasizes differences of competence between organizations. Competition is seen not only, and not even primarily, as competing on the price of a homogenous product, i.e. a product that can be closely substituted by users between different suppliers, but also, and primarily, as an attempt to maintain competencies that are scarce and difficult to imitate by potential competitors (Lippman and Rumelt 1982), to achieve higher profit. Such variety among firms is also a crucial feature of evolutionary economics, with its explanatory triad of variety, selection and transmission. Variety among firms makes nonsense of analysing an industry on the basis of a 'representative firm'.

This chapter begins with a summary of standard TCE, followed by criticism, from the perspective of innovation and learning. For a transformation and extension of the theory, the chapter proceeds with the summary of a theory of knowledge and learning, derived from Nooteboom (2000). According to this theory, knowledge is constructed on the basis of mental categories that are formed in interaction with the environment. This develops into the notion of an organization as a 'focusing device', which yields an additional view on the boundaries of the firm, next to other views, including TCE. It also provides a cognitive argument for inter-organizational relations, next to the customary arguments that will be summarized later. Such relations serve to compensate for the organizational myopia that results from organizational focus. This perspective of learning has implications for the choice of the form of collaboration, and for the selection of instruments for the governance of relational risk, which deviate from TCE.

### Transaction cost economics

Chiles and McMakin (1996) distinguished two perspectives in TCE. The first is a long-term evolutionary perspective, where objective transaction costs determine the survival of the fittest governance forms. The second is a short-term managerial choice perspective, where managers act on subjective costs that are based on a variety of perceptions and evaluations of risk. The latter explains why firms in similar circumstances may make different make-or-buy trade-offs. This chapter takes the latter perspective. The behavioural assumptions of TCE are that rationality is bounded and that people may be opportunistic. While people aim to be rational, their capacity to do so is limited, due to two types of uncertainty: behavioural uncertainty concerning the intentions and competencies of transaction partners and environmental uncertainty concerning conditions that may affect the execution of agreements and the outcomes of cooperation. As a result, closed contracts that foresee and regulate all possible eventualities are impossible. Not everybody is equally opportunistic, but the possibility of opportunism exists, and prior to a relation one does not know to what extent it may arise. Opportunism is defined as 'interest seeking with guile'. This includes actions against the interest of a partner, and against the letter or intent of an agreement, when the occasion presents itself, where necessary with the aid of lies or concealment of the truth. The opportunity for this follows from unpredictability of conditions and asymmetric information.

Williamson (1985: 1) defined a transaction as 'transfer across a technologically separable interface'. This includes transfers within an organization. A transaction is an event that takes place during a process of exchange, in which the transaction has a past and a future. Here, I prefer to define the transaction as the moment at which agreement is established and ownership rights are transferred. Such rights include either claims to profit or decision rights, or both. When it is restricted to decision rights it can still apply within organizations.

In the process of exchange one can distinguish three stages, of what I call Contact, Contract and Control (Nooteboom 1999). Before the arrangement of a contract or other agreement arises one must find a transaction partner. This entails search costs on the part of the user and marketing costs on the part of the supplier. Search costs are associated with becoming aware of a need, and possibilities for fulfilling it, searching for fitting solutions and alternatives and their evaluation. Marketing costs form the mirror image of this: the research of latent or manifest needs among potential customers, possibilities to satisfy

them, development of specifications, tests and search for entry to customers. In the stage of Contract there are costs of preparing and concluding a contract or other type of agreement, as much as possible in anticipation of possible problems that might occur after transaction, in the stage of control. In the stage of Control there are costs of monitoring of the execution of the agreement, 'haggling' about it, problem solving, renegotiation and adjustment of the agreement, enforcement, and application of sanctions, litigation and possible loss of 'specific investments' and 'hostages' if the relation breaks. Costs of contract and control arise especially when parties become dependent upon each other due to costs of switching to a different partner. In particular, these obtain when the transaction entails 'specific investments' that are worth less or nothing outside the alliance (Williamson 1975), so that they would need to be made anew with a different partner.

A classic example of a specific investment is the die in which a part of a car (door, hood) is stamped into shape. It has the shape of the part and is therefore as 'specific' as anything can get. It is also expensive because it is large and made of hard, durable material, to survive the force of stamping and maintain a constant shape. The investment in the die is not recouped until a large number of items has been stamped, and that requires a minimal volume or duration of production. If production is stopped, the die has no more than scrap value.

Transaction specific investments can occur at both buyer and supplier. There are three kinds of transaction specific investments: 'site specificity', 'physical asset specificity', and 'human asset specificity'. Williamson further recognized the category of 'dedicated assets': expansion of capacity only to serve a given partner.

Some examples of site specificity are: infrastructural facilities (roads, pipes and ducts, homes, shops) for labourers of a remote mining facility; supply of heat from cooling water from a factory for heating of adjacent homes (due to rapid loss of heat in transport); a warehouse or production facility 'at the doorstep' of a customer, to provide 'just in time' supply. An example of human asset specificity is training dedicated to specific demands of the partner.

Transaction costs due to specific investments yield a reason for integrating activities within a single firm, which offers better control of opportunism and uncertainty (Williamson 1975), because of administrative fiat in obtaining information to judge actions and in imposing solutions, which goes far beyond what one could achieve in a court of law on the basis of a contract with an outside, independent partner. TCE predicts that there should and will be more integration to the extent that there are more specific investments and uncertainty is greater.

Integration can be achieved through sales of assets, a merger or acquisition, or an equity joint venture (In the following, 'joint venture' refers to 'equity joint venture'). But a non-integrative, contractual alliance between different firms has advantages over integration: more 'high-powered incentives' in separate firms that are responsible for their own survival, economies of scale in production by specialized firms (Williamson, 1975), and greater flexibility in the configuration of complementary competencies or assets. However, such alliances raise complicated issues of 'governance', in 'hybrid' forms of organization 'between market and hierarchy' (Williamson 1991), to deal with the fiduciary risks of dependence and corresponding problems of coordination.

An important issue is the extent to which dependence due to specific investments is symmetric between partners. When a supplier engages in specific investments, this does not only make him dependent, but also his buyer, because when a break in supply occurs, the buyer will not have an immediate substitute of equal quality and cost. It will take an alternative supplier time to set up specific investments, and meanwhile the buyer will either face a discontinuity of supply or he will have to temporarily accept a product that does not fit his requirements, i.e. has lower quality. Also, apart from physical assets, a buyer will need to make adjustments in procedures, organization, knowledge to adapt to the specialized product, assets or competencies of the supplier, and these also constitute specific investments. At least he will have to invest in specific knowledge of the supplier's procedures, people involved, etc. However, there is no guarantee that dependence due to specific investments is symmetric. Generally, the weight of specific investments, in a variety of resources, including both physical and human resource assets, tends to be higher on the supplier's side.

In IOR's, there are several means to reduce the risk of one-sided dependence due to specific investments. One is to restrict opportunities for opportunism by contract, e.g. by forcing the partner to continue transactions until the cost of investment has been recouped. Another is to have the partner participate in the ownership of the investment. But to do this, the partner may in turn demand guarantees against the misuse of such guarantees, e.g. that the investment is indeed specific and is not used for transactions with others. There may also be an exchange of 'hostages', defined as things that are of value only to the giver and not the keeper, so that the latter will not hesitate to destroy the hostage when the hostage giver reneges on his commitment. Often, a hostage takes the form of sensitive information from or about a partner that would cause damage when destroyed or leaked the partner's competitors. Another instrument is to reduce the partner's incentives or inclination to utilize opportunities for opportunism. These can impinge on the partner's self-interest, or on his sense of loyalty. This may include reputation effects: if the partner gets known to be unreliable, it will jeopardize future transactions.

Generally the cost and delay of setting up and maintaining elaborate schemes of governance between two partners ('bilateral governance') are substantial. When the transaction involved is small or infrequent, the benefit is not worth the cost, and one will prefer to keep contracts simple and engage a trusted third party to act as an arbitrator ('trilateral governance'). The classic example is an architect who arbitrates in transactions between a builder and a supplier of building materials.

A relatively minor point of criticism of TCE is that the theory would be more consistent in taking the relation rather than the transaction as the unit of analysis. The essential notion of the 'fundamental transformation' from 'large to small numbers bargaining', as a result of specific investments, requires it. The issue is, precisely, that an investment, made to conduct any transaction at all, is tied to a transaction partner, and thereby requires ongoing transactions in that particular relationship.

Another relatively minor point of criticism of TCE is that it suggests that specific products require specific investments: that when one tailors a product to special needs one needs to make investments that can cater only to those specialized needs. However, to the extent that technology is flexible an investment can, by definition, be used to produce a range of differentiated products (Nooteboom 1993a). For example, a programmable workbench for machining metal can yield parts of a variety of shapes and functions, without the operator needing to adapt his skill. Software for designing and testing virtual prototypes of machines, cars or airplanes by means of computer simulation yields much greater flexibility for a range of different designs than old-fashioned physical prototypes subjected to 'real' testing (such as testing the aerodynamic properties of a car in a wind tunnel).

A more fundamental point of criticism is that TCE neglects effects of the embeddedness of relations in wider networks, as studied in sociology. However, that goes beyond the scope of this chapter. Two other fundamental points of criticism concern the lack of innovation and learning in TCE, and its neglect of trust. These are of particular interest from a neo-Schumpeterian view, and are discussed below.

### Innovation and learning

As Williamson (1985, p.143) himself admitted: '..the study of economic organisation in a regime of rapid innovation poses much more difficult issues than those addressed here'. Williamson (1999) claimed that he fully accepts bounded rationality: there is fundamental uncertainty concerning future contingencies. However, he claims, there is foresight: one can take such uncertainty into account, infer the hazards that follow from it and conduct governance accordingly (in a 'discriminating alignment') and 'efficiently', i.e. in an optimal fashion (to yield an 'economizing result'). We are not myopic, Williamson claims: we are not so stupid as not to take uncertainties into account when we design governance. And indeed, we can to some extent take risks and uncertainty into account. Firms can spread risks by participating in different markets, in the same way that investors can spread risks in a portfolio of investments. Beyond that, to deal with real or radical uncertainty, we can construct scenarios of possible futures, prepare contingency plans for them, and identify the robustness of strategies across different scenarios. Shell Oil Company, for example, developed this in the seventies, in anticipation of oil crises.

Scholars in the competence perspective do not assume myopia, as Williamson accuses them of doing. However, they ask, as TCE does not, what the implications of bounded rationality are for the correct identification of relevant hazards. Bounded rationality implies that we might be mistaken about them. Williamson (1999: 1103) admits that TCE 'makes only limited contact with the subject of

learning', and indicates that we may be mistaken about hazards and may learn about them as events unfold (1999: 1104). And apart from hazards there are new options. In spite of great imagination and ingenuity, the scenario's we invented may not include what actually arises. Also, preferences may shift. That is part of learning. And if new insights in hazards arise, new scenario's, or new options or goals, are we then able to shift from the governance structure engaged upon to an adapted, optimal form? That would always be possible only if there is no path-dependence or lock-in in governance, and that is a strong claim to make.

This is related to the issue of 'efficient', optimal outcomes. Williamson's argument is that 'dysfunctional consequences and other long run propensities will not be mindlessly repeated or ignored' (Williamson 1999: 1105). But the argument begs a number of questions. It implies that dysfunctionality and long run propensities are stable, so that experience in the past is indicative of the future. There is no guarantee that this is the case. Indeed, in innovation and learning it is not, almost by definition. And if we could correctly adapt our foresight, how can we be sure that the firm survives to implement the lesson in time? TCE seems to fall back on the notion of selection: inefficient forms of organisation will be selected out by 'the market'. That is the usual assumption behind the economist's assumption of efficient outcomes, going back to Alchian (1950). But if that is Williamson's argument, he is deviating from the perspective of the firm strategist, who is talking about the survival of the firm (Chiles and McMakin, 1996). Furthermore, the selection argument was already shown to be weak by Winter (1964). In selection it is not the best possible but the best available in the population that survives. In the presence of economy of scale inefficient large firms may push out efficient small firms, and thus inefficiency may survive. Furthermore, efficient selection cannot be taken for granted in view of possible monopolies, entry barriers and transaction costs.

Williamson claims that his theory is inter-temporal, incorporating the passage of time, and indeed he claims that this is *central to* TCE (1999: 1101). And indeed, up to a point it does incorporate inter-temporality. It makes a distinction between ex ante considerations, before commitment of transaction specific investments, and ex post considerations, after their commitment. This yields the 'fundamental transformation' from multiple to 'small numbers' of options. The theory also is inter-temporal in the sense of taking uncertainty concerning future contingencies into account, as discussed in the previous section. However, TCE does not go far enough and, again, is not consistent in this. Williamson (1999: 1101) does claim that 'governance structures are predominantly instruments for adaptation, it being the case that adaptation ... is the central problem of economic organisation; organisation has an inter-temporal life of its own ...'. He admits, however, that this 'is not to say that it (TCE) has worked all of these out in a satisfactory way. I entirely agree that transaction cost economics stands to benefit from more fully dynamic constructions. But whereas saying dynamics is easy, doing dynamics is hard'. This is in line with Williamson's other admission, quoted above, that learning is not well developed in TCE. Nowadays innovation and learning are crucial, and should be in the core of theory.

TCE appears to adhere to a naive theory of knowledge and competence, with the assumption that technology is accessible more or less 'from the shelf', to anyone who pays its price. However, firms may need to contract some good or service from outside simply because it is not itself capable of providing it, or may need to produce it itself because no one else has the resources needed. Furthermore, to understand what others firms supply, to evaluate it and to incorporate it in internal activities, requires appropriate 'absorptive capacity' (Cohen and Levinthal 1990). A deeper, cognitive issue arises from the theory of knowledge employed in this chapter, which will be outlined in the next section.

### Cognitive distance and organizational focus

After criticism of TCE, attention now turns to ways to mend its shortcomings. Here, attention turns to innovation and learning. Diversity is a crucial condition for learning and innovation, to produce Schumpeterian 'novel combinations', as demonstrated in evolutionary economics (Nelson and Winter 1982). Diversity is associated with the number of agents (people, firms) with different knowledge and/or skills, who are involved in a process of learning or innovation by interaction. However, next to the number of agents involved, a second dimension of diversity is the degree to which their knowledge or skills are different. This yields the notion of 'cognitive distance', based on a constructivist, interactionist view of knowledge (Mead 1934, Berger and Luckmann 1967, Weick 1979, 1995, Nooteboom 2000). According to this view, people perceive, interpret, understand and evaluate the

world according to mental categories (or cognitive frames, or models, cf. Johnson-Laird 1983), which they have developed in interaction with their physical and social environment. As a result, people see and know the world differently to the extent that their cognition has developed in different conditions (national, regional and organizational culture, customs/habits, social norms/values, education, technologies, markets). This yields the notion of cognitive distance, and the notion of a firm as a ‘focusing device’, as part of a ‘cognitive theory of the firm’, proposed by Nooteboom (2000). This view can be seen as harking back to Austrian perspectives of the firm (Menger, von Mises, von Hayek), with attention to problems of learning, localized knowledge, and the market as a ‘discovery process’. The key features of the theory are summarized below.

Here, cognition is to be seen in a broad sense, including not only rational evaluation but also emotion-laden value judgements, and heuristics of attribution, inference and decision-making that we know from social psychology (Bazerman 1998, Tversky and Kahneman 1983). In a firm, people need to achieve a common purpose, and for this they need some more or less tacit shared ways of seeing and interpreting the world. In view of incentive problems, in monitoring and control, especially in contemporary organizations of more or less autonomous professionals, and the desire for intrinsic next to extrinsic motives (Frey 2002), people in organizations also need to share more or less tacit values and norms, to align objectives, govern relational risk and to provide a basis for conflict resolution. Due to uncertainty concerning contingencies of collaboration, and limited opportunities for monitoring, ex ante measures of governance are seldom complete, and need to be supplemented with ex-post adaptation. Organizational focus, provided by organizational culture, yields an epistemological and normative ‘substrate’ to achieve this, as basis for shared processes of attribution, mutual adaptation and decision-making. In other words, cognitive distance needs to be restricted for the sake of coordination. Organizational culture incorporates fundamental views and intuitions regarding the relation between the firm and its environment, attitude to risk, the nature of knowledge, the nature of man and of relations between people, which inform content and process of strategy, organizational structure, and styles of decision-making and coordination (Schein 1985). One aspect of entrepreneurship, which links with Schumpeter’s notion of the entrepreneur as a charismatic figure, is that it is his central task to achieve this: to align perceptions, understandings, goals and motives.<sup>3</sup>

Note that the notion of focus does not entail the need for people to agree on everything, or see everything the same way. Indeed, such lack of diversity would prevent both division of labour and innovation within the firm. However, there are some things they may have to agree on, and some views they need to share, on goals, norms, values and ways of doing things.

Organizational focus needs to be tight, in the sense of allowing for little ambiguity and variety of meanings and standards, if the productive system of a firm, for the sake of exploitation, is ‘systemic’, as opposed to ‘stand-alone’ (Langlois and Robertson, 1995). Exploitation is systemic when there is a complex division of labor, with many elements and a dense structure of relations between them, with tight constraints on their interfaces. An example is an oil refinery. In more stand-alone systems, elements of the system are connected with few other elements, and connections are loose, allowing for some ambiguity and deviation from standards on interfaces. An example is a consultancy firm. An intermediate system, between systemic and stand-alone, is a modular system. Here, there are also multiple, connected elements, as in the systemic case, but the standards on interfaces allow for variety, where different modules can be plugged into the system.

Organizational focus yields a risk of myopia (in ‘group think’): relevant opportunities and threats to the firm are not seen. To compensate for this, firms need outside contacts for ‘external economy of cognitive scope’ (Nooteboom 1992). On the basis of different experiences, with different technologies and different markets, and different organizational histories, in other words at some cognitive distance, outside firms perceive, interpret and understand phenomena differently, and this may compensate for organizational myopia. This yields a new purpose for inter-organizational alliances, next to the usual considerations, known from the alliance literature, such as economies of scale and scope, risk spreading, complementarity of competence, flexibility, setting market standards, and speed and efficiency of market entry.

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<sup>3</sup> Related to this, perhaps, Adam Smith recognized ‘authority’ next to utility, in politics and organization, to establish allegiance to joint goals, as discussed by Khalil (2002).

The different foci of firms entail cognitive distance between firms. In processes of learning and innovation, in interaction between firms, this yields both an opportunity and a problem. The opportunity lies in diversity: the novelty value of a relation increases with cognitive distance. However, mutual understanding decreases with cognitive distance. If effectiveness of learning by interaction is the mathematical product of novelty value and understandability, the result is an inverse-U shaped relation with cognitive distance. Optimal cognitive distance lies at the maximum of the curve. This is illustrated in Figure 1.

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In Figure 1, the downward sloping line represents understandability, on the basis of 'absorptive capacity'. The upward sloping line represents the novelty value of a relation. The optimal level of cognitive distance from a learning perspective lies in-between very low and very high levels of cognitive distance. Absorptive capacity is not fixed. It may be raised, and then, as illustrated in figure 1, optimal cognitive distance increases, together with the innovative output of collaboration. For more codified knowledge, absorptive capacity may be raised by R&D, and for more tacit knowledge it may be raised by cumulative experience in communication with people who think differently. Note that, due to the integration, in cognition, of both rationality and emotion-laden value judgements, cognitive distance also includes differences in goals and in attitudes towards organization, fair dealing, and the like.

Wuyts et. al. (2005) put the hypothesis of optimal cognitive distance to two empirical tests. The first test was conducted on a combination of the basic hypothesis of optimal cognitive distance with the second hypothesis that cognitive distance decreases with increased frequency and duration of interaction. This yields the hypothesis of an inverted U-shaped relation between radical technological innovation and the extent to which firms ally with the same partners over time. That hypothesis was tested on data on vertical alliances between biotech and pharma companies, and was supported. The second test was conducted on a combination of the basic hypothesis of optimal cognitive distance with a second hypothesis that the likelihood of a collaborative alliance increases with the expected performance of collaborative innovation. This yielded the derived hypothesis that the likelihood of an alliance for innovation has an inverted U-shaped relation with cognitive distance. That hypothesis was tested on data on horizontal alliances in ICT industries. Partial support was found. Technology-related measures of cognitive distance were not found to have any significant effect, but several indicators of differences in firms' organizational characteristics proved to have the expected inverted U-shaped effect. Three considerations were offered to explain why organizational aspects turned out to be more important than technological ones in ICT industries. First, as indicated in the earlier theoretical discussion, when a technology is systemic, as is the case in ICT, then, almost by definition, organizational issues are more important than in the case of stand-alone technology, as in biotechnology. Second, in the ICT case the alliances are horizontal, and there the threat of mutual competition between alliance partners is higher than in vertical alliances, as in the pharma-biotech case. That requires more attention to issues of governance and organization. Third, according to innovation theory there is a cycle of innovation, where, after a stage of volatility, technology converges on a 'dominant design'. Then demand and competition increase, and attention shifts to organization for commercialization (market entry, access to distribution channels) and efficient production, which may in turn lead to a dominant design in organization (Abernathy 1978, Abernathy and Clark 1985, Abernathy and Utterback 1978). ICT industries are largely in that stage of shifting innovation from technology to organization.

### Trust

TCE has been ambiguous about trust. In his 1975 book, Williamson employed the notion of 'atmosphere', which comes close, it appears, to trust. In his 1985 book trust is not dealt with. Later, Williamson (1993) faced the issue squarely and asked a very good, challenging question: Does trust go beyond calculative self-interest? If it does not, it adds nothing to existing economic analysis. If it does,



it entails blind trust and that is inadvisable in market relations, outside relations of family or friendship. In markets it will not survive. Thus, Williamson argued, whichever way you look at it, trust can be discarded. In his 1999 article Williamson suggests that scholars in the competence perspective 'presume the absence of opportunism ...(and thereby) .. enter the world of utopian fantasies'. Of course, those scholars are not that naive. They accept the possibility of opportunism but they reject Williamson's neglect of trust.

TCE does not assume that everyone is equally opportunistic, but that prior to a transaction one can have no reliable information about one's partner's degree of opportunism, and therefore one has to *assume* opportunism, as a basis for governance, to avoid the hazard involved. Williamson (1985: 59) argued as follows: 'inasmuch as a great deal of the relevant information about trustworthiness or its absence that is generated during the course of bilateral trading is essentially private information - in that it cannot be fully communicated to and shared with others (Williamson 1975: 31-37) - knowledge about behavioural uncertainties is very uneven.' This may be so. But it yields insufficient argument to ignore trust. Why should it be easy to incorporate trust? Even if it is difficult, disregarding it may be worse.

When Williamson argues for the *assumption* of opportunism, he does not seem to be aware of the price one pays for that. It leads one to possibly costly contracting. Due to economies of scale in transaction costs it is especially costly for or with regard to small firms (Nooteboom, 1993b). What is worse, such a contract might seriously constrain the freedom and open-endedness of action that is crucial especially when the collaboration is aimed at innovation and the development of new competencies. Even worse than that, the expression of distrust, based on the assumption of opportunism, is likely to destroy the basis for building up trust as the relation unfolds. There is much evidence in the trust literature that distrust breeds distrust and may even elicit opportunism. Then the assumption of opportunism may become self-fulfilling, with considerable costs of contracting and loss of perspective for a fruitful relationship.

At some level trust is inevitable. Markets could not work without non-calculative trust. Complete lack of trust beyond calculative self-interest would prevent one from entering any relation and would thereby deprive one from evidence that may contradict mistrust. Absence of trust would yield an infinite regress of seeking safeguards for the hazards involved in ambiguity concerning the terms of safeguards. Such ambiguity is inevitable: even legal language does not yield complete lack of ambiguity. No language can. It has been recognised by others that even if all relevant contingencies were known, there will still be incompleteness of contracts because of 'bounded writing and communication skills' (Hart 1990: 699) and the fact that 'language would not be rich and precise enough to describe all the eventualities' (Milgrom and Roberts 1992: 129). On the other hand, too much trust will be corrected by experience that invalidates it. The question now is what the basis for 'genuine' trust might be.

There is a vast literature on trust that cannot fully be discussed here (for a survey, see Nooteboom, 2002). There is a widespread view that trust, in a wide sense, includes elements of control or 'deterrence', including both legal coercion and control by incentives and dependence, as well as elements that go beyond control, as a basis for 'goodwill' or 'benevolence' (see e.g. the special issue of Organization Studies on 'Trust and control in organizational relations', 22/2, 2001). As noted by Maguire et. al. (2001: 286), if we do not include the latter, we conflate trust and power. The first (control or deterrence) is part of calculative self-interest, but the latter (benevolence) is not. Many authors feel that control is foreign to the notion of trust, and that 'genuine' trust is based on other, more social and personal foundations of trustworthiness. This is in accordance with Williamson's view that the notion of trust is meaningful (in what we called 'genuine trust') only if it goes beyond calculative self-interest. Therefore, trust has been defined as the expectation that a partner will not engage in opportunistic behaviour, even in the face of countervailing short-term opportunities and incentives (Bradach and Eccles 1984, Chiles and McMackin 1996, Nooteboom 1996).

There are several foundations of trust beyond calculative self-interest. One lies in norms and values concerning decent behaviour, or ethics, which constrain opportunism. Within firms, this is part of the culture of a firm, as part of its focus, as indicated before. In several writings, Williamson seemed to acknowledge, often implicitly, that norms of behaviour are part of the institutional environment, or of the institutional arrangements of firms. But how does this square with his 1993 rejection of trust that goes beyond calculative self-interest? If norms of behaviour are conducive to trust, are they then part

of calculative self-interest? Norms of behaviour are not calculative, selected rationally, but are socially inculcated, and form part of tacit, unreflective principles of behaviour. They go beyond utility.

Williamson (1993) explicitly rejected other foundations of genuine trust, such as loyalty based on empathy, identification, friendship, and reciprocity. Those, he claimed, should be reserved for friends and family only. But, inevitably, such social-psychological phenomena also play a role in business relations. Furthermore, one can learn to trust and be trustworthy, in a way that is not blind or irrational. Here, the lack of learning in TCE connects with its lack of trust.

As a transaction relation unfolds in time, one can accumulate more or less reliable information about trustworthiness. And such experience can be communicated in reputation mechanisms. The sociological literature gives extensive instructions how to infer intentional trustworthiness from observed behaviour (Deutsch 1973). Did the partner act not only according to the letter but also to the spirit of the agreement? Did he give timely warnings about unforeseen changes or problems? Was he open about relevant contingencies, and truthful about his dealings with others who might constitute a threat to oneself? Did he defect to more attractive alternatives at the earliest opportunity? Or to use Hirschman's (1970) notions of 'voice' and 'exit': how much voice rather than exit did he exhibit? Furthermore, the literature on trust indicates the possibility that in interaction partners may get to understand each other better, which enables a better judgement of trustworthiness, in 'knowledge based trust'. In ongoing interaction they may first develop insight in each other's cognitive frames, in empathy. This does not entail that they always agree. There may be sharp disagreements, but those are combined with a willingness to express and discuss them more or less openly, in 'voice', extending mutual benefit of the doubt. As a result, conflicts may deepen the relationship rather than breaking it. Next, partners may develop shared cognitive frames, by which they may identify with each other's goals, in 'identification based trust', with understanding or even sympathy for weaknesses and mistakes (McAllister 1995, Lewicki and Bunker 1996).

Another, though related, basis for trusting behaviour lies in routinization (Nooteboom 1996, Nooteboom et. al. 1997). Herbert Simon a long time ago showed that routines have survival value because they reserve our scarce capacity of 'focal awareness' in rational, calculative thought, for conditions that are new and demand priority. When things go well for a while in a relationship, one tends to take at least some of it for granted. One may no longer think of opportunities for opportunism open to a partner, or to oneself. And it seems rather odd to call routines calculative. How can something that is subconscious be calculative? I proposed (Nooteboom 2002) that on the basis of experience in relations, trustworthiness is assumed until evidence to the contrary emerges. In other words, trust is a 'default'. The possibility of opportunism is relegated to 'subsidiary awareness' (Polanyi 1962).

In spite of all this, surely Williamson was right in his warning of the dangers of trust that becomes blind. However, he went overboard when stating that authors in the competence perspective 'presume the absence of opportunism ...(and thereby) .. enter the world of utopian fantasies' (Williamson 1999). Most authors in the competence perspective do not wish to suggest either that there is no threat of opportunism, or that self-interest or control are absent, or that altruism and goodwill operate independently from it. The relation between the two is a subject for extensive debate. As noted by Bachmann (in Lane and Bachmann 2000: 303), trust is a hybrid phenomenon, including both calculation and goodwill. Trust can work without becoming unconditional, which would indeed be unwise, as Williamson suggests. While trust is not always calculative, it is constrained by possibilities of opportunism (Pettit 1995).

One way to model trustworthiness is in terms of a limited resistance to temptation towards opportunism. This may be modelled as a threshold for defection: one does not opportunistically defect until the advantage one can gain with it exceeds the threshold.<sup>4</sup> This threshold depends on the wider cultural environment, the narrower cultural environment of a firm one works for, personal upbringing, and personal relations. It is likely to adapt as a function of experience. It also depends on pressures of competition and survival. In competitive markets trustworthiness will be less than in more protected ones. Trust may then be modelled as based on an assumption, perception or inference of such a (limited) resistance to temptation of opportunism. Within that limit, one can economize on contracting.

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<sup>4</sup> This feature has been included in an agent-based computational model of the build-up and break-down of trust in buyer-supplier relations (Klos and Nooteboom 2001).

When temptation becomes too large, trust is likely to make way for calculation. So even though trust is and should be limited, since indeed unconditional trust is unwise, within the margin of perceived or assumed trustworthiness it can save on contracting.

Routines are not unconditional, unless they have sunk so deeply into our nature that they have become instincts. Generally, when something out of the ordinary occurs, our awareness shifts from subsidiary to 'focal' and we look critically at what is going on. As Simon (1983) pointed out, we need emotions of danger and excitement to catapult us into focal awareness. In relations of voice, we must next control emotions to give the partner the benefit of the doubt, rather than immediately assume the worst. Thus, routine behaviour is not necessarily blind, or more accurately: it is not unconditional. Does this triggering back into focal awareness, then, make routines calculative? Again: can subsidiary awareness be called calculative? And can emotional triggering be called calculative?

Nooteboom et. al. (1997) conducted an empirical test of explanations of perceived relational risk of suppliers, on the basis of TCE variables and variables relating to non-calculative trust. Both explanations were confirmed, showing that TCE and non-TCE variables can be complementary. The TCE variables were: specific investments, mutual dependence, legal and private ordering. The trust variables, beyond TCE, were: the development of joint norms of behaviour, and routinization. The test was conducted on data from 10 customer relations for each of 10 producers of electrical/electronic components.

### Further extensions

The inclusion of learning and trust leads on to further extensions of TCE.

One extension is effects of scale in transaction costs. Transaction costs differ between large and small firms. There are effects of scale on both sides of a transaction relation: a small firm as supplier and as a customer (Nooteboom 1993b). Transaction costs, in all stages of contact, contract and control, are higher for a small firm due to a lack of staff support in marketing, legal matters, personnel, finance and accounting. The set-up costs of governance are high relative to the size of the transaction. Therefore, in relations with small firms, use will more often be made of an outside arbitrator or mediator to settle conflicts, instead of detailed contracts and formal procedural agreements ('trilateral governance'). Costs of monitoring and control are higher due to a greater tacitness of knowledge: there are fewer formal, documented sources of information, which makes small firms more inscrutable. One needs to extract the required information from the minds of people, or deduce it from their actions. That is also why small firms are often unattractive customers for consultants. This problem is exacerbated by the fact that small firms are more diverse than large ones (Nooteboom 1994).<sup>5</sup> The inscrutability and diversity of small firms yield problems in the stages of contract and control. There is less formal documentation as a basis for contracts or other agreements and for monitoring compliance with them. Note that here there is a double effect. First, there is an effect of scale in setting up a contract and a monitoring system. Second, there is less documented information available for it. Given a certain volume per transaction, a smaller firm has fewer transaction partners, and therefore less spread of relational risk. One can try to improve this by taking a larger number of partners, with a smaller transaction per partner, but that is often not attractive due to effects of scale in transactions, due to minimum set-up costs of contact, contract and control indicated above. A small firm may also burden his partner with a greater risk of discontinuity due to default, because due to a smaller spread of commercial risk across multiple products and markets default risk is higher for smaller firms. Small firms may also raise the suspicion that they are

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<sup>5</sup> First, as a motivational or 'final' cause, they have more diverse goals of entrepreneurship: not necessarily maximum profit or growth, but also independence, going their own way, maintenance of a traditional life or way of doing things, staying small and informal or wanting to try out things which are rejected in large firms. Second, as a conditional cause which makes this possible, small firms exist more on private capital and are therefore less subject to the rigours and criteria of success imposed by capital markets. Connected with this, they are not subjected to an outside supervisory board. These factors leave more room for idiosyncratic goals and ways of doing things.

opportunistically engaging in ‘hit and run’: going for a fast profit with an unreliable or bad quality product, or a product without future support, and leave the market when the damage becomes evident.<sup>6</sup>

In an extended theory of transactions, there are also two extensions of the notion of specific investments. One is the investment in mutual understanding, needed to cross cognitive distance, in the building of mutual empathy, i.e. understanding of a partner’s cognition. This may to large extent be relation-specific. Related to this, the second extension is the building of relation-specific trust, by mutual understanding, which helps to identify limits of trustworthiness, in different respects (competence, benevolence), under different conditions. As discussed, an issue concerning trust is the relation between personal and organizational trust. In IOR’s, one needs to trust both the organization, in both its competence and intentions to support and guide the conduct of its people, and the competence and intentions of the people one deals with. The two are connected by the roles that people have in organizations.<sup>7</sup> It takes time and effort to get to know all this, and to develop coherent individual and organizational trust. Especially for small suppliers to large firms, this may entail a very high and highly relation-specific investment, relative to the volume of trade involved.

Another extension is the inclusion of spillover risk next to the hold-up risk analysed by TCE. Spillover risk is the risk that knowledge that forms part of competitive advantage is absorbed and used for competition by partners, in direct or indirect relationships. For an assessment of this risk one should, first of all, take into account that the questions should not be only how much knowledge spills over outwards but also how much spills over inwards, and what the net advantage is. Spillover risk further depends on a number of contingencies (Nooteboom 1999). Tacit knowledge spills over less easily than codified knowledge. Whether spillover matters for competition depends on the absorptive capacity of potential competitors, i.e. their ability to understand what they see (taking into account ‘causal ambiguity’), and, after that, to implement knowledge for effective competition, given organizational focus. Finally, if by the time all that has happened the knowledge involved has changed, one would not care. These considerations are of great importance for the structure and governance of IOR’s, as will be shown later.

### Boundaries of the firm

From the beginning of TCE (Coase 1937), a core question concerned the purpose and the boundaries of the firm. Different answers are reviewed here. They are not necessarily substitutes, and can well complement each other. For example, cognitive and transaction cost arguments may be combined. To answer such questions, let us first consider some key features of organization.

The basic features of an organization include a *structure* of *elements* (subsidiaries, divisions, teams, individual people) that have resources and *repertoires of action* (competencies), with *decision rules* that govern *choice* from those repertoires, to achieve *goals*, in *coordination* (which includes governance) between those elements. Coordination is needed to the extent that elements are connected, i.e. their actions, in both their selection and performance, depend on each other. The position that an element has in a structure, i.e. its pattern of ties with other elements, constitutes its *role* in the organization (Nooteboom and Bogenrieder 2002). Note that there may be different levels of repertoires, including those for the development of repertoires (learning). In organizations, many actions and decision rules or heuristics are routinized, and may have a large tacit component. In other words, they constitute organizational routines (Nelson and Winter 1982). Decision rules may or may not be rationally designed, and they incorporate decision heuristics from social psychology. Goals also may be largely tacit. Different elements in the organization may or may not know or understand some or all of each other’s actions and repertoires, and may or may not agree on each others’ goals. In other

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<sup>6</sup> This is more probable for small than for large firms, who have invested more in reputation, face wider consequences of reputational damage, across products and markets, in a larger portfolio, and find it more difficult to hide after they run. In other words: small firms may lack the discipline of reputation. To eliminate suspicion, the small firm may need to demonstrate that it is committed to the longer term, vulnerable to reputational loss, and it may need to point to the existence of exacting partners who can be expected to be critical and competent in judging the reliability of the small firm.

<sup>7</sup> This is connected, for example, with the notion of the ‘buy group’ in industrial (B to B) marketing: the different people involved in a buy decision, and their distribution of power and competence.

words, there may be differences in semantics and values, and some of those may even be irreconcilable. However that may be, it was argued above that an organization requires a certain 'focus', of some shared views of the world, goals and ways of doing things, in order to function and survive as a collective. This focus may be wide, allowing for much diversity, or narrow, depending on a variety of conditions. In other words, an organization puts limits, somewhere, to cognitive diversity.

There are a number of familiar arguments for the existence of organizations. A legal argument for organization derives from the need for a legal identity of a group of people working together, to regulate ownership of assets, conditions of employment, liability and accountability. In the literature on IOR's, there are claims that boundaries of firms are blurring, in forms of organization 'between market and hierarchy'. This is correct in the sense that in IOR's forms of governance extend across boundaries of the firm, in forms of semi-integration. In the legal sense, however, boundaries remain clear (Hodgson 2002). In other words, boundaries of organization as forms of co-ordination do indeed blur, but boundaries of organizations as legal entities do not. The legal argument does not, however, specify what activities have to be combined in an organization, and why.

Economics has given a variety of arguments for integrating different activities in an organization. One is technical: when complementary activities are technically inseparable, they need to be integrated by definition. A second type of economic theory derives from the need to align incentives in complementary activities, in the face of possible problems of monitoring, due to asymmetric information. One branch of that theory is 'principal-agent' theory. That will not be used in this chapter, because it puts the analysis of collaboration on the wrong foot, with its assumption that there is a clear, independent principal ('boss') on one side, and a dependent agent on the other side, who is driven to satisfy the demands of the principal. In IOR's, dependence and power are often not balanced, but nevertheless, in collaboration agents are to be seen as each others' principals and agents at the same time. One of the main obstacles in collaboration is that people tend to take a one-sided principal-agent view.<sup>8</sup>

Another branch of this type of economic theory is transaction cost economics, as discussed above. According to this theory, boundaries of the firm arise from a trade-off between on the one hand costs of contact, contract and control, which are higher outside than inside a firm, and advantages of scale and motivation in outside, independent, specialized production.

In this chapter, a new, cognitive, argument is offered, as discussed above. Organizations need a cognitive focus, which entails a danger of myopia, which is to be mended by access to complementary cognition from outside partners, at optimal cognitive distance ('external economy of cognitive scope'). Organizational boundaries are determined by the tightness of organizational focus, which depends on several conditions (Nooteboom 2000). One condition is the relation between exploitation and exploration, and the position in this that is chosen by the firm. Exploration requires a wider focus, and exploitation a narrower one. How difficult it is to combine the two in one organization depends on how systemic vs. stand-alone exploitation is. Highly systemic exploitation yields problems in allowing for the wider scope needed for exploration. One may specialize in either exploitation or exploration, and 'outsource' the other in IOR's. The notion of focus is related to the notion of 'core competence' from the business literature (Prahalad and Hamel 1990). That notion refers to competencies in which a firm can distinguish itself from competitors, to make profit from specialties that cannot easily be imitated. It is meant to go beyond existing capabilities, to include the ability to develop new ones. The notion also seems similar to that of organizational routines, on different levels, indicated above.

In much of the business literature on IOR's, opinion seems to have settled on a rather extreme view in favour of outsourcing everything that is not part of 'core competencies'. However, that may go too far.<sup>9</sup> The question of course is what, exactly, is to be seen as part of core competence, and what is meant by the qualification, given above, that one should outsource as much as 'strategically possible'. When is something not to be outsourced even if it is not part of core competence?

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<sup>8</sup> Such a perspective is usually taken, also, in theories of corporate governance, with shareholders in the seat of the principal. Taking that approach, one fixes shareholder value as the basic value of firms from the start. One can also take a more balanced view of different 'stakeholders', in a balancing of their interests (Nooteboom 1999b).

<sup>9</sup> Teece 1986, Bettis et. al. 1992, Chesbrough and Teece 1996.

Philips Company is a user of chips (semi-conductors) as components in many kinds of consumer electronics. A compact disc player, for example, requires a combination of mechanics, laser technology, electro-technology, control technology and informatics. Should Philips make its own chips, or contract them from specialist producers? The production of chips entails high tech surface technology, to affect, at a microscopic level, the conducting properties of a silicon disc by means of sophisticated physical and chemical processes. That does not seem to fit with Philips' core competencies. So, according to the maxim of sticking to core competencies it seems reasonable to have it contracted out. But there are strategic complications. The first is that the world-class producers of chips are the same Japanese companies that compete with Philips in the market for consumer electronics. Should one become dependent for supply on one's main competitors? The second complication is that the development of technology and markets is very rapid, and new products often arise from novel combinations of existing technologies, and often one needs to react fast to novel opportunities. The 'window of opportunity' is narrow and passes fast. For this reason one may need to maintain competence in an area that in a static situation one should surrender. The production of semiconductors requires sophisticated (miniaturized, uncontaminated and perfectly accurate) technology, with physical and chemical processes for etching micro patterns on the surface of silicon slices, and modifying conductive properties in those patterns. Similar technology can also be used for the deposition of thin layers on surfaces for other purposes, such as hardening materials, coating photovoltaic cells or the production of sensors. Thus, the technology of chips production is a 'platform' technology, which contributes to other products than chips, which might fit well in Philips product portfolio. To keep such future options open, chips production may have been seen as part of core competence.

The hypothesis concerning 'external economy of cognitive scope' entails that greater uncertainty in an industry, in terms of the volatility of technology and markets, yields a greater need to engage in outside relations with other organizations, to correct for the myopia of organizational focus. Thus, the hypothesis entails that in such industries there will be more outside relations, in inter-firm alliances for innovation and technical development. This is contrary to the hypothesis from transaction cost economics (TCE) that in the presence of transaction-specific investments increased uncertainty yields an incentive to integrate activities under a single 'hierarchy' (Williamson, 1975, 1985). The argument from TCE is that the dependence resulting from specific investments yields a risk of 'hold-up', which is difficult to control between firms under conditions of uncertainty concerning contingencies of contract execution, and easier to control under conditions of managerial fiat, in a hierarchy, which yields more scope for demanding information for monitoring, and for resolving conflicts of hold-up. I do not deny that argument. However, I propose that from the theory of learning used here there may be an overriding argument in favor of outside relations, for the sake of external economy of cognitive scope. The problem of hold-up that may arise from specific investments then has to be resolved by relational governance, which reconnects our theory with TCE.

The hypothesis of an increased need for alliances under conditions of volatility has been confirmed by Colombo and Garrone (1998). They analyzed the strategies of telecommunication carriers in the early '90s and found that in Internet services and content, where technology and demand uncertainty were especially high, the relative rate of alliance formation was higher than in other communication industries characterized by absence of such extreme uncertainty. In addition, in the former industries a large share of the alliances established by telecommunication carriers had an inter-sectoral nature, linking them with firms from a variety of industries; this suggests that external economies of cognitive scope may have played a key role in alliance formation.

#### Mergers/acquisitions or alliances?

There are many forms of IOR's, which vary along a number of dimensions: number of participants, network structure, and type and strength of ties, including ownership and control. Here, the literature benefits from extensive network analysis in sociology. Network structure includes features such as: density, centrality, and structural holes. Ties may have wide or narrow scope, depending on the range of activities included in them. Strength of ties has a number of dimensions: frequency of contact,

duration, size of investments, specificity of investments, and openness of communication. For a systematic discussion, see Nooteboom (2004). Here, only a key question is discussed, related to the boundaries of the firm: when do firms engage in integration, in merger or acquisition (MA), and when do they keep distance, in alliances between formally independent organizations? This section analyses this choice both normatively, i.e. in terms of what is good for the firm, depending on conditions, and descriptively, i.e. according to what choices are actually made, and why.

Note that an MA entails integration in the legal entity of one organization. Within that organization, it might allow for high degrees of decentralization. Table 1 summarizes the argument for the alternatives of an MA and an alliance.

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Table 1 about here  
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Overall, the argument for integration, in an MA, is that it yields more control, in particular of hold-up and spillover risk, and of present and future core competencies. For hold-up, the argument comes from TCE. Within a firm, under the grasp of 'administrative fiat', in an employment relation, one can demand more information for control and one can impose more decisions than one could in respect of an independent partner. A similar argument applies to spillover risk: one can monitor and control better what happens to information. Of course, even within organizations this may not be easy, as a result of asymmetric information, tacit knowledge, and mis-aligned incentives and motivations. However, under the legal umbrella of a firm, one has more opportunities than between different firms. As discussed earlier, an argument for integration may also be that one needs to maintain control of activities or resources that are complementary to core competencies, i.e. are needed to utilize them or to appropriate their advantages, or that are needed to retain options for future core competencies. The example was given of the chips division of Philips Company. Philips might have to hold on to it since it appears to be a platform technology for a range of potential future markets. Another possible argument is that that one may need to retain a certain capability in an outsourced activity to be able to judge its quality, for the selection and governance of outside relationships. However, there may be ample opportunities to maintain options for future core competencies in alliances. And capability of judging supplier quality may be derived from a joint benchmarking service, in the industry.

The take-over of a young, dynamic, innovative firm may serve to rejuvenate an old firm (Vermeulen and Barkema 2001). In a growing new firm, the entrepreneur often has to turn himself around to the role of an administrator, or hire one, to delegate work and institute formal structures and procedures for the coordination of more specialized activities in large-scale production and distribution. He may not be able or willing to do that, and it may be to the benefit of the firm when it is taken over by a firm with a better managerial capability. However, it may be more likely that the entrepreneurial dynamic of the small firm gets stifled in the bureaucracy of the acquirer, in which case it should stay separate.

Overall, the argument for an alliance is that it allows partners to maintain more focus of core competence, more flexibility of configuration and more variety of competence for the sake of innovation and learning. The flexibility argument derives from rigidities in re-arrangement of activities within organizations. This varies across business systems: it is less in the US than in continental Europe and Japan. Hence, network structures of firms are more needed in the latter regions (Nooteboom 1999c).

Also, as recognized in TCE, an independent firm that is responsible for its own survival will be more motivated to perform than an internal department that is assured of its custom. Another great advantage of an alliance is that it entails fewer problems of clashes between different cultures, structures and procedures, in management, decision making, remuneration, labour conditions, reporting procedures and norms of conflict resolution, which often turn out to be the biggest obstacles for a successful MA. Of course such clashes can also occur in alliances, but less integration still entails fewer problems of integration.

There is an argument of scale for both forms. In production, many economies of scale have been reduced, e.g. in computing. However, there is still economy of scale in, for instance, distribution channels, communication networks, network externalities and brand name. For integration, the

argument of scale is that one pools volume in activities in which one specializes. For outsourcing, the argument is that for activities that one does not specialize in, an outside, specialized producer can collect more volume, producing for multiple users. That may also offer more opportunities for professional development and career to staff that are specialized in that activity. Note the argument from TCE that if assets are so dedicated that a supplier can produce only for the one user, the scale argument for outsourcing disappears.

There is an argument of economies of scale or scope for integration only if they are inseparable (Williamson 1975). It depends how systemic rather than stand-alone activities are (Langlois and Robertson 1995).

One form of economy of scope is that different activities share the same underlying fixed cost, for example of R&D, management and administration, communication network or brand name. When one of the activities is dropped, the utilization of fixed costs may drop. However, this is not necessarily so. It may be possible to share such overhead with others, as happens, for example, in 'incubators' for small firms, or collaboration in an R&D consortium.

From the perspective of brand image there are arguments for both integration and separation. In an alliance there may be too great a risk that the image or quality of a brand allotted to partners will not be maintained sufficiently scrupulously. On the other hand, it may be better to maintain an independent, outside brand, to preserve its local identity.

The Dutch RABO bank years ago wanted to move into consumer credit, but felt that it would detract from its brand identity, which was associated with savings accounts, and therefore consumer credit was offered by a separate subsidiary with a different name ('Lage Landen'). However, years later consumer credit had become a normal product, required in the product range of any bank, and RABO incorporated the 'Lage Landen' under its own name. Staying with the RABO bank, an illustration of reinforcing one's product range by pooling complementary products is the cooperation between RABO, who offered a personal securities investment service through its advisors, and ROBECO, who offered a security investment fund to which consumers could subscribe by phone, without intermediaries. The two were pooled to yield a full line of service.

Finally, there are reasons of default. One is that one would like to take one form but it is not available, because a partner is only available for the other form, or because it is forbidden by competition authorities.

In the airline business, for example, MA are problematic for reasons of national pride and interest, perhaps strategic military reasons, and the fact that landing rights are nationally allocated.

Another default is that one would like to take over only part of a larger firm, but it is not separately available for takeover, without the rest, in which one is not interested because it would dilute core competence. Another is that one cannot judge the value of a take-over candidate and needs some period of collaboration in an alliance to find out. Previously, value could more easily be judged by adding up values of material assets than now, when intangibles such as brand name, reputation, skills and knowledge are often more important, and difficult to value.

Clearly, the choice between MA and alliance is quite complex. If one wants a simpler, general rule of thumb, it is as follows: consider full integration, in an MA, only if the partner engages in the same core activities in the same markets. In all other cases, i.e. when activities and/or markets are different, the rule of thumb suggests an alliance. According to this rule, what one would expect, on the whole, is vertical disintegration and horizontal integration.

In banking, increase of efficiency in an MA can, for example, be achieved by eliminating one of two branch offices (or automatic teller machines) in locations where both banks are represented. Threshold costs in specialized knowledge of specific industries and in setting up ICT networks



and databases can be shared. Reserves to cover risks of defaulting customers can be shared and spread. In an MA between banking and insurance there are economies of scope in the utilization of branch offices, ICT networks, advertising, customer relations. Such economy is further enhanced by adding travel bookings. In MA's in banking, insurance and accounting an important motive also is the building of a worldwide network of offices from different companies pooling their offices in different continents, in order to yield global service to global customers. However, here one could ask whether the same objectives could not be achieved in an alliance, with the added advantages associated with that.

There are four theoretical arguments for the rule of thumb. First, in horizontal collaboration, with the same activities in the same markets, partners are direct competitors, and it is most difficult to control conflict without integration. The game is more likely to be zero-sum. The temptation to exploit dependence is greatest. There is a threat of direct rather than indirect spillover. Second, in horizontal collaboration core competence is more similar, so that integration does not dilute it too much. Third, here the cognitive advantages of alliances are less: the diversity in knowledge is already minimal, with small cognitive distance, and thus there is less need to preserve it by staying apart. Fourth, with the same products, technology and markets, differences in culture, structure and procedures are likely to be minimal. Of course, they can still be substantial.

The Dutch steel corporation ('Hoogovens') a long time ago undertook a merger with the German colleague. After ten years of struggle it was broken up again, because attempts to integrate the two companies remained unsuccessful. Ten years after that, in Hoogovens there were still two rival camps, of those who had supported the merger, and were reproached that the failure was their fault, and the opponents, who were blamed by the proponents for having sabotaged the merger. Ten years after that, Hoogovens merged with British Steel, in CORUS. At present (March 2003), that merger is about to collapse, due to a conflict of interest. The British side has suffered from a more senescent technological outfit and a high exchange rate for the pound. To generate funds for restructuring, the British leadership of CORUS wanted to sell off a Dutch aluminium subsidiary, but this was blocked by the supervisory board of the Dutch branch, which was challenged by the British, in front of a Dutch court, which ruled that the Dutch action was legal. This reflects, among other things, a different view of corporate governance.

One important qualification of the rule of thumb is the following. The overlap of activities and markets, which would favour integration, does not concern the situation prior to collaboration, but afterwards. In other words, if collaboration would lead to such overlap, integration may be needed before that overlap arises. In other words, one should look not at current but at intended core competencies.

The argument for the rule of thumb is not only theoretical. Bleeke and Ernst (1991) showed empirically that when this rule is applied, the success rate of both MA and alliances rises substantially. If for a given method of measurement the success rate is less than 50 % without the rule, success rises to 75 % with the rule, for both MA and alliances. However, the rule given above is only a rule of thumb, to which there are exceptions. For more detailed analysis one can use Table 1, with the corresponding logic set out above.

Next to good reasons for MA, alliances and outsourcing, there are also reasons that are bad, in the sense that they are not in the interests of the firms involved. One such reason is the bandwagon effect: one engages in a practice because it is the fashion to do so. When a practice becomes established, the drive for legitimation may yield pressure to adopt it without much critical evaluation. Another reason is a prisoner's dilemma that applies especially to MA: if one does not take over one may be taken over, which may yield a loss of managerial position, so one tries to be the first to take over, even though it would be best for all to stay apart. Another reason is managerial *hubris*: managers want to make a mark and appear decisive or macho. This also applies especially to MA's: those are quicker, more visible and dramatic than collaboration between independent firms. There is also the often-illusory presumption that a take-over is easier than an alliance. Subsequently, however, the MA often fails due to problems of integration and has to be disentangled again. Even speed is a dubious argument. It may on the surface seem that an MA is in place faster than an alliance, for which one

must negotiate longer and set up an elaborate system of 'bilateral governance'. However, the speed of an MA is misleading: the decision may be made quickly, but the subsequent process of integration is often much slower and more problematic than assumed. An alliance is often better even if in the longer run a takeover is the best option, to allow for the process of trust development, discussed before. Also, it yields the option to retract when failure emerges, without too much loss of investment. Bad reasons of bandwagon effects, managerial hubris or macho behaviour, and career profile may also thwart alliances. However, here the damage is more limited, and it is easier to retrench when failure emerges.

### Governance

The earlier analysis shows that in addition to the usual instruments to govern risk of opportunism, taken from TCE, there are also sources of trust that go beyond them. The first include hierarchical and legal control, mutual dependence, hostages, and reputation. The latter include ethical norms and values in the institutional environment, and the building of relation-specific norms, empathy, identification and routinization. Table 2 gives a survey of instruments, which includes instruments for the governance of both hold-up and spillover risk. Every instrument also has its drawbacks, which are also specified in the table.

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Table 2 about here  
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The first instrument entails a cop-out. In view of relational risk, hold-up is avoided by not engaging in dedicated investments, and spillover is avoided by not giving away any sensitive knowledge. The opportunity cost of this is that one may miss opportunities to achieve high added value in the production of specialties by investing in collaboration and learning with partners. The second instrument is integration in a merger or acquisition (MA), with the advantages and drawbacks discussed in the previous section.

Below the line, in Table 2, there are instruments for alliances between formally autonomous organizations, where one accepts risks of dependence due to specific investments and of spillover, and seeks to control them by other means than full integration in one organization. One option is to maintain multiple partners, in order not to become dependent on any one of them, and to demand exclusiveness from any partner, to prevent spillover. However, maintaining relations with alternative partners entails a multiplication of costs in dedicated investments and the governance needed to control the risks involved. Exclusiveness entails that in the specific activity involved one forbids the partner to engage in relations with one's competitors. The first problem with this is that the demand of exclusiveness forbids the partner what one allows oneself: partnerships with the partner's competitors. By having those relations one increases the spillover risk for partners. As a result, none of them may be willing to give sensitive information, which degrades their value as sources of complementary competence and learning. Furthermore, the demand for exclusiveness blocks the variety of the partner's sources of learning, which reduces his value as a partner in learning, at a cognitive distance that is maintained by his interaction with outside contacts. Hence one should consider whether spillover is really a significant risk, as discussed before. If it is not, all parties can gain from maintaining multiple partners, perhaps for maintaining bargaining position, but especially for maintaining variety of sources of learning and flexibility of configurations.

A second instrument is a contract, in an attempt to close off 'opportunities for opportunism', by contracts. The problem with this instrument is fourfold. First, it can be expensive to set up. Second, it can be ineffective for lack of possibilities to monitor compliance, due to asymmetric information. Even if one can properly assess the execution of agreements, especially small principals may not be in a position to credibly threaten litigation, due to the economies of scale involved. A scale effect arises when the risk, effort and cost of litigation are large relative to the damage involved. Third, contracts have limited feasibility because of uncertainty concerning future contingencies that affect contract execution. This applies especially when the purpose of collaboration is innovation. Finally, detailed contracts for the purpose of closing off opportunities for opportunism express distrust, which can raise

reciprocal suspicion and distrust, with the risk of ending up in a vicious circle of regulation and distrust that limits the scope for exploration of novelty and obstructs the build-up of trust as an alternative approach to governance.

Another approach is to aim at the self-interest of the partner and limit incentives to utilize any opportunities for opportunism left by incomplete contracts. These instruments have been mostly developed in TCE. Self-interest may arise from mutual dependence, in several ways. One is that the partner participates more or less equally in the ownership and hence the risk of dedicated assets. A second approach to self-interest is to use one's own dedicated investments to build and offer a unique, valuable competence to the partner. Thus, the effect of dedicated investments can go in different directions: it makes one dependent due to switching costs, but it can also make the partner dependent by offering him high and unique value. This instrument can yield an upward spiral of value, where partners engage in a competition to be of unique value for each other.

Dependence also arises from a hostage, as also suggested by TCE. One form of hostage is minority participation, where one can sell one's shares to someone who is eager to undertake a hostile take-over the partner. A more prevalent form is sensitive information. Here, the notion of hostage connects with the notion of spillover. One may threaten to pass on sensitive knowledge to a partner's competitor. Reputation also is a matter of self-interest: one behaves well in order not to sacrifice potentially profitable relations with others in the future.

The limitation of instruments aimed at self-interest is that they are not based on intrinsic motivation, and require monitoring, which may be difficult, especially in innovation. Furthermore, balance of mutual dependence is sensitive to technological change and to the entry of new players that might offer more attractive partnerships. Hostages may die or may not be returned in spite of compliance to the agreement. Reputation mechanisms may not be in place, or may work imperfectly (Hill 1990, Lazarcic and Lorenz 1998). They require that a defector cannot escape or dodge a breakdown of reputation, e.g. by selling the business or switching to another industry or another country. It requires that complaints of bad behavior be checked for their truth and be communicated to potential future partners of the culprit.

Beyond self-interest, one may also appeal to more intrinsic motives that determine 'inclinations towards opportunism'. This yields the role of trust, discussed above. Another possibility is to employ the services of a third party or 'go-between', which will not be specified here. One will generally select some combination of mutually compatible and supporting instruments from the toolbox of governance, and the use of a single instrument will be rare. There is no single and universal best recipe for governing IOR's. The choice and effectiveness of instruments depend on conditions: the goals of collaboration, characteristics of the participants, technology, markets and the institutional environment.

For example, there is no sense in contracts when the appropriate legal institutions are not in place (lack of appropriate laws), or are not effective (police or judiciary are corrupt), or when compliance cannot be monitored (for lack of accounting procedures). When technology is flexible, so that one can produce a range of different specific products with one set-up, the specificity of investments and hence the problem of hold-up is limited. Possibilities of spillover are constrained when knowledge is tacit, and do not matter when technology changes fast. Reputation mechanisms don't work when there are ample exit opportunities for defectors. Trust is difficult in a distrustful environment, where cheating rather than loyalty is the norm.

Innovation has its special conditions. Exchange of knowledge is crucial, with corresponding risks of spillover. Especially in innovation, the competencies and intentions of strangers are difficult to judge. Relevant reputation has not yet been built up. Uncertainty is large, limiting the possibility of specifying the contingencies of a contract. Specific investments are needed to set up mutual understanding. There is significant hold-up risk. Detailed contracts would limit the variety and scope for the unpredictable actions and initiatives that innovation requires. Under these conditions, trust is most needed to limit relational risk. An additional problem with contracts is that they may obstruct the building of trust. This does not mean that there are or should be no contracts at all. Indeed, there will almost always be some form of contract. However, they should then not be too detailed with the purpose of controlling hold-up risk.

Especially in innovation, a productive combination of instruments is mutual dependence complemented by trust, on the basis of an emerging experience in competent and loyal collaboration.

Trust is needed besides mutual dependence, because the latter is sensitive to changing conditions. Trust is more difficult under asymmetric dependence because the more dependent side may be overly suspicious (Klein Woolthuis 1999), in the so-called 'Calimero syndrome'. In all this, go-betweens can help. Without them the building of trust may be too slow.

In the literature, contracts and trust are primarily seen as substitutes. Less trust requires more contracts, and detailed contracts can obstruct the building of trust. However, this view is too simplistic. Trust and control can also be complements (Das and Teng 1998, 2001, Klein Woolthuis 1999, Klein Woolthuis et. al. 2003). First of all, as discussed above, trust has its limits, and where trusts ends contracts begin. Second, there may be a need for an extensive contract, not so much to foreclose opportunities for opportunism, but to serve as a record of agreements in a situation where coordination is technically complex. Third, a simple contract may provide the basis for building trust, rather than being a substitute for it. Fourth, one may need to build up trust before engaging in the costs and risks of setting up an extensive contract. This risk may include a spillover risk: in the course of negotiation much information gets divulged for partners to assess each other. Finally, a contract may be psychological and serve to flag trust, and signing a contract may constitute a ritual of agreement.

Perhaps the most important point is that relationships should be seen as processes rather than entities that are instituted and left to themselves. Conditions may change. A frequent problem is that a relationship starts with a balance of dependence, but in time the attractiveness of one of the partners slips, due to slower learning, appropriation of his knowledge by the other partner, institutional, technological or commercial change.

Choice of instruments for governance may be constrained. Options depend on the structure of the networks one is in, and on one's position in them. Coleman (1988) proposed that a dense structure with strong ties enables the build-up of reputation, the formation of coalitions, and social capital, in the form of trust and social norms. This helps governance, but also constrains actions.

Strong ties, in the sense of high frequency and intensity, and long duration, yield shared experience, which reduce cognitive distance, and enable the development of empathy and identification.<sup>10</sup> These help governance, but can weaken competence building, in the elimination of cognitive distance needed for learning. Dense networks with strong ties can also yield inefficiencies due to redundant ties, and rigidities due to lock-in into the network, with exit prevented by coalitions of network members. Thus, IOR's may yield rigidity. As a result, ending a relationship may be as important, and arguably more difficult, than beginning one. A more detailed analysis of the process of relationship development is beyond the scope of this chapter (see Nooteboom 2004).

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<sup>10</sup> McAllister 1995, Lewicki and Bunker 1996.

Figure 1.1: Optimal cognitive distance

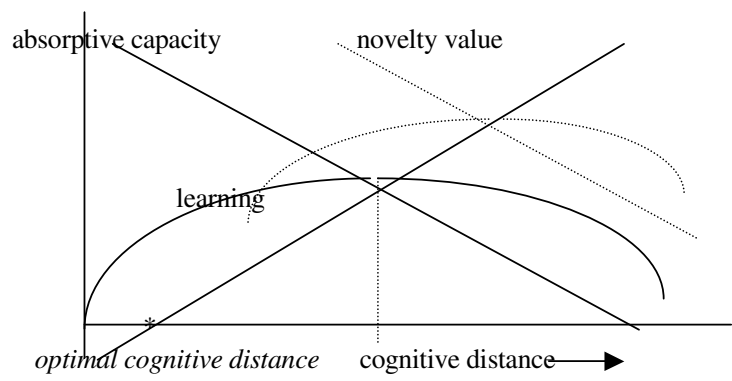


Table 1 Reasons for an MA or alliance

	MA (integration)	Alliance (keeping distance)
Efficiency	inseparable economy of scale in core activities inseparable economy of scope	economy of scale in non-core activities motivating force of independence lower costs & risks of integration
Competence	maintain appropriability, options for future competence spillover control rejuvenation provide management for a growing firm	maintain focus on core competence maintain diversity, cognitive distance maintain entrepreneurial drive
Positional advantage	control hold-up risk control quality brand name protect other partners from spillover ensure against take-over keep out competition	maintain flexibility maintain local identity/brand of partner
By default	partner only available in MA difficulty of evaluating a take-over candidate collusion forbidden by competition authorities	partner only available in alliance interest only in part of a partner MA forbidden by competition authorities
<i>Rule of thumb</i>	<i>in case of same core competencies same markets</i>	<i>in case of complementary competencies markets</i>

Table 2 Instruments of governance, and their drawbacks

Instrument	Drawback
<i>Risk avoidance:</i> no specific investments, no knowledge transfer	lower added value, with lesser product differentiation (in case of dedicated technology), no learning,
<i>Integration:</i> MA	less flexibility, variety, motivation, problems of integration (see Chapter 3)
<i>Number of partners:</i> maintain alternatives demand exclusiveness	multiple set-up costs, spillover risk for partners limitation of variety learning
<i>Contracts:</i>	problematic under uncertainty, can be expensive, straight-jacket in innovation, can generate distrust
<i>Self-interest:</i> mutual dependence hostages, reputation	opportunistic: requires monitoring and is sensitive to change of capabilities, conditions, and entry of new players
<i>Trust:</i>	needs building up if not already present has limits, how reliable? relation between individual and organisation
<i>Go-betweens:</i>	may not be available, how reliable?
<i>Network position:</i>	needs time to build, side effects

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