Sleeping with the Enemy

ISBN 90-365-1333-8

This publication is part of the research programme ‘Interorganisational relationships and innovation’ of the University of Twente EntrepreneurshipCentre.

English correction by Giles Stacey, Englishworks
Lay out and cover design by Michiel de Boer
Typeset in Garamond and Gill Sans
Printed by FeboDruk

Sleeping with the Enemy

Trust, dependence and contracts in interorganisational relationships

Proefschrift

ter verkrijging van
de graad van doctor aan de Universiteit Twente
op gezag van de rector magnificus
prof. dr. F.A. van Vught
volgens besluit van het College voor Promoties
in het openbaar te verdedigen
op vrijdag 27 augustus 1999 te 13.15 uur

door

Rosalinde Jennifer Aleid Klein Woolthuis
geboren op 22 januari 1970
te Uithoorn

Dit proefschrift is goedgekeurd door:
Prof. dr. ir. W.E. During (promotor)
Prof. dr. B. Nooteboom (co-promotor)
Dr. A.J. Groen (assistent promotor)

Promotiecommissie:

Prof. dr. W. van Rossum	Universiteit Twente
Prof. dr. P.T. Bolwijn	Universiteit Twente
Prof. dr. M. Mønsted	Copenhagen Business School
Prof. dr. B.G. Johannisson	Växjö University / Lund University
Prof. dr. J.M. Veciana	Universitat Autònoma de Barcelona
Prof. dr. R. Oakey	Manchester Business School

To Manna, Johanna and Ina

Preface

Interfirm cooperation, networks, virtual organisations, regional networks, clusters, strategic alliances, mergers, joint ventures, co-makerships, buyer-supplier relationships, outsourcing are all words that refer to linkages, from loose to very close, between two or more companies. These words have become very much in fashion recent decades. My interest in these phenomena was triggered by the 'miraculous' growth of the Japanese economy. As important reason for this economy's growth, the dense networks between companies, governmental agencies and banks was often mentioned. Looking further into the concepts of cooperative linkages and other 'miraculously' growing economies, my attention was drawn to the literature on regional development in the Third Italy and other regions. Here also interorganisational relationships were mentioned as an important reason for fast economic growth. Based on these observations, a lively debate was started on 'the new competition', a new industrial paradigm, or a new economic order. Alongside market and hierarchy, a pleaded was held for the economic logic of flexible network relationships.

However, alongside the advantages of interfirm relationships that the academics described, there were the great challenges associated with the management of these relationships. From many years of research on cooperative relationships it can be concluded that most relationships still fail. Therefore, the questions how interorganisational relationships develop over time, and what mechanisms can explain their success, become relevant. This thesis was started to examine these question since only then the basis would be laid to answer the question how interorganisational relationships can contribute to economic development and growth.

Although doing research, and writing a thesis, is sometimes a lonely journey, you never walk alone. There are many people I would like to thank for their help by initiating and completing my journey. I want to thank Ab Waszink for suggesting me to start this research, and Harry Commandeur for his never diminishing support and enthusiasm from that moment on. I thank the teachers of the European Doctoral Program for providing me with the basis to carry out my research. Wim During, Bart Nooteboom and Aard Groen have played an important role in the further research process, data-analysis and in the writing of my thesis. I appreciate not only their valuable professional advice, but also their kindness and personal support.

For their contribution to the longitudinal case research, the TIMP members cannot receive enough appreciation. They allowed me to study their network for more than four years and were

always open, kind and supportive. A special thanks goes to Dennis Schipper who has been my truthful scout when TIMP developments were sometimes hard to understand as an outsider.

Hans van der Stappen and Martin Stor have provided me with many opportunities to discuss interorganisational relationships from the viewpoint of the regional development agencies and of the supporting agencies. So did the colleagues in the Discussion Platform on Cooperation, the Pionier! group and in the Syntens network. Many cases on cooperation were discussed and implications were distilled for the professional and governmental support of interorganisational relationships. In cooperation with Jos van der Pas and the Pionier! group, this led to the publication of a practical handbook for cooperation. I thank SENTER for their contribution to the quantitative part of this research. I have great admiration for Ingrid Houthuysen for showing in practice, also when circumstances did not encourage such, what trust and loyalty are all about.

Because doing research is such an individual journey, good colleagues, friends and family are invaluable. In this respect a special word of thanks goes to Luitzen de Boer, Frans Ruffini and Bas Hillebrand. As good colleagues and friends they have supported me in good and bad times, which I will not easily forget. Joost Brinkman has made himself unforgettable thanks to his incredibly practical skills and his rescue operations every time I ran into problems. Marisa Fasolo, my dear flying friend, also despite your help I managed to finish in time.

I want to thank my family and closest friends for always being there. My love goes to Michiel and Jules van Texel. With you our house became a home.

Rosalinde Klein Woolthuis
July 1999

Table of contents

1

Introduction and methodology

Trust, contracts and dependence are very basic characteristics of our everyday lives. We depend on our relatives and friends for their emotional, and sometimes financial, support and they depend on us. Employees depend upon their employers for their income, just as the employers depend on them to perform their jobs as prescribed. Interestingly enough we make ourselves dependent without giving it much thought. Still this dependence makes us vulnerable.

In business relationships this vulnerability is often dealt with by contracts. An employer and employee draw up a contract to specify the job, the wages, the employment period and lay down arrangement for possible relationship termination. By creating a contract, both the employer and the employee try to safeguard their interests.

In personal relationships trust often serves as the assurance that relatives and friends will not misuse dependence. We trust our relatives to take care of us if needed. We trust our friends not to tell our secrets to anyone else, and the penalty for breaking a promise can be an argument or the loss of a good friend. The rules for trustworthy behaviour are not as well specified as in a written contract. They are laid down in societal norms and values, and in specific norms of behaviour between (groups of) people, friends and family.

Although trust thus seems primarily related to our personal lives, and contracts to our professional lives, in many occasions this distinction is not so clear. For employees it is important that they can also trust their boss. For the employer it is important that employees can be trusted to perform their job well and do not to misuse the trust given to them. If partners cannot trust each other in these things, a working relationship becomes impossible. Partners would have to closely monitor each other's behaviour to prevent opportunistic use of dependence. Specially in situations where it is hard to determine exactly what is expected of the other party, and what should be the outcome of a relationship, the importance of trust becomes evident.

"Sleeping with the enemy" refers to this fragile balance between dependence, trust and contracts. In interfirm relationships aimed at the development of new products, companies often have to establish very close relationships with a partner. They depend on each other's knowledge and capacity, they have to be open, share all information, and give insights into their way of working. In line with this sense of becoming partners and creating something new together, inventors and engineers often talk about a marriage when referring to their relationship, and to

their baby when referring to the joint project. In jointly pursuing high technological innovations they sometimes have to establish close relationships with their enemies. If partners know this, they can try to protect themselves by withholding information, drawing up extensive contracts, or for example by establishing a joint venture. In most cases though, parties are not sure whether their partner is, or will ever become, their enemy. Will he keep your information confidential, will he not run off with another partner just when you need him most, will he share costs and benefits fairly and not try to reap disproportionate gains, will he not become your competitor with the knowledge you gave him? These questions can never be answered with certainty. Doubts will always exist. To cope with this, people search for ways to reduce their uncertainty. Contracts can be a means to this end, but trust is just as essential to enable open and constructive cooperation. How trust, dependence and contracts are related to each other and how they function in high technology interorganisational relationships are the focus of this thesis.

1.1 Interorganisational relationships in a technological setting

Cooperative strategies have become increasingly fashionable in recent decades. In a technological setting these cooperative strategies have their own specific characteristics. The development of new products, processes and technologies is essentially different from, for example, the production of a commodity good or the marketing of a new product. Hence cooperation on technological development is also very different. Open communication and sharing of highly specialist knowledge will be required to be able to complete the development trajectory and to jointly achieve the set goals. This is not something a company will do without concern. It has to be able to trust its partner's capability to perform the negotiated tasks, and in its integrity to deal with the shared information in an confidential way. Doubts on the partner's capabilities and trustworthiness might actually make the manager/entrepreneur want to refrain from cooperation. Still most companies cannot innovate successfully without the help of external partners. Since innovation requires a combination of products, markets, technologies and organisational capabilities (Boer & During 1999) and most companies do not have all the required expertise in-house for all these fields, they have no other choice than to cooperate with complementary specialists. If they want to do it alone, they have to have, or develop, all these functions in-house. This is increasingly unlikely with a single firm, especially when it is a new or small company. As Zagnoli & Cardini (1994:13) state:

> "Despite extensive financial and human resources, it is increasingly difficult for R&D and technological innovation to be carried out within the boundaries of a single firm, especially when the development and implementation of a new product involves the resolution of problems in areas of both basic and applied research".

Besides the described risks concerning the capabilities and trustworthiness of a partner firm, project and innovation management pose challenges to the individual and joint firms. Projects have to be managed across organisational boundaries, compatibility must be guaranteed and cooperation should be developed in a way that openness and creativity can flourish to make

successful innovation possible. The management of the innovation process poses challenges because of the highly complex character of technological innovation. Whereas, in many economic transactions, goals, costs and benefits can be relatively easy determined, Boer & During (1999:3) argue that the innovation process is characterised by:

- *Uncertainty* or unpredictability: the extent to which parties are informed about the future (Galbraith 1973). This uncertainty concerns the process (technological innovation) as well as the outcome (the product/process and market exploitation). Uncertainty is highest in the initial stages of the innovation process. Bradach & Eccles (1989:102) describe uncertainty as a situation in which ex ante product/process specifications are uncertain and hence design and production costs are difficult to calculate and performance measurement is difficult.
- *Complexity*, comprehensibility or analysability: the difficulty with which the work can be understood. (Mintzberg 1979).
- *Diversity*: the variety of work that needs to be done, in terms of the number of competencies required to perform the innovation process (Mintzberg 1979).
- *Interdependence*: the extent to which (groups of) people depend on one another for their outputs (Thompson 1967). Because many interorganisational relationships (IORs) are not organised in clear buyer-supplier structures, not hierarchical but horizontal relationships are found. This implies that the interdependent partners in innovation have to reach agreements based on compromise and not on authority.

As a result of uncertainty, complexity, diversity and interdependence, contracts and project plans are difficult to fully specify ex ante. For the management of a project this implies that much needs to be negotiated during the project execution. While the first activities are being executed, new problems or possibilities may arise. Hence new decisions will be made that determine the way in which the project progresses. In this way some development paths are closed while others are discovered or opened (During 1984:50). Moreover, during this process, the level on which changes occur, and decisions have to be made, can differ from the strategic to the operational level (During 1984:37). It is not possible to determine in advance how the innovation process will develop on these different levels and what the consequences will be for other levels (i.e. disappointment with operational execution may lead to different strategic choices).

Because no single partner has formal authority over another, every decision or adjustment has to be discussed and jointly agreed upon. On the operational level partners will likely give each other much autonomy since each partner has its own specialist knowledge and capabilities. However, if changes occur which have an impact on the strategic level, the partners should likely renegotiate their agreement or the way in which it is executed.

The joint characteristics of (1) uncertainty with regard to the partner firm (capability/reliability), (2) the complexity of the innovation process (uncertainty, complexity, diversity and interdependence) and (3) the difficulties with the management of both the relationships and the project on different levels, make innovation in interorganisational relationships a difficult process. Hence it comes as no surprise that many cooperative efforts fail.

1.2 Problem statement

Because the possible benefits of joint innovation are widely acknowledged (see Best 1990, Håkansson 1987, Larson 1991, 1992, Piore & Sabel 1984, Rothwell 1989, 1991, 1992) and the potential difficulties are also acknowledged (Jacquemin 1987, 1991), many studies have been conducted to explore the characteristics of interorganisational relationships in technological development. Most studies have focused on topics related to the success or failure of interorganisational relationships. Questions that have been addressed include, what change interfirm cooperation brings to economic organisation and development (Piore & Sabel 1984), what problems can be distinguished in IOR management (Jacquemin 1987, 1991; KPMG 1996), what benefits can be derived from IORs for regional development (Pyke, Becattini & Sengenberger 1992), how companies manage their IORs (Håkansson 1987, Commandeur 1989, 1994) and how a partner should be chosen (Bidault & Cummings 1994; Douma 1994, 1997).

The picture that emerges from these studies is however predominantly static. Motives for cooperation are elaborated upon without taking into account that motives may change over time. Partner selection is discussed without taking into account the complex interactions that take place between partners on the personal and the company level after the selection phase. Furthermore, most studies are based on 'fit' thinking. As long as company cultures match, complementary goals exist and similar strategies are chosen, cooperation is assumed to proceed successfully (Douma 1997). As can be understood from the foregoing, these 'fits' are also highly susceptible to changes over time. Therefore I do not focus on static fit thinking. Instead I will focus on the dynamic process of IOR development and the underlying mechanisms that govern these developments. Valuable contributions have already been made to the dynamic study and analysis of IORs by for example Commandeur (1989, 1994), Dollinger (1990), Håkansson (1987, 1989), Nooteboom (1996), Ring & Van de Ven (1994), and by game theorists such as Axelrod (1984) and La Manna & Norman (1992). The number of studies that explicitly address IOR dynamics, while using the same basic assumptions as in this thesis, is however limited. In this thesis the point of departure is considered critical and therefore only those dynamic theories are adopted that are rooted close to the basic argumentation of transaction costs economics. This implies that other theories are left aside despite their potential value to this thesis.

A hint of the underlying mechanisms in the IOR process was already made in the introduction to this chapter. Every relationship, whether personal or business, contains elements of trust, dependence and contract. Especially in a technological setting, dependence on other partners is often high because of required complementarity, and trust should also be high to enable companies to enter into a cooperation characterised by so many uncertainties (partner's capabilities and trustworthiness, project costs and benefits, market potential etc.). To cope with the partner and project uncertainties, contracts can be drawn up. These are difficult to draw ex ante though, and hence, technological cooperation is compared to sleeping with the enemy. In this study it will be emphasised though, that trust, dependence and contracts are not exogenous. They can be changed consciously and be used to govern the relationship. Trust can be built by cooperative and loyal behaviour, dependence can be limited to an acceptable level, and contracts

can be consciously drawn up, used and adjusted to guide the relationship developments. In this thesis it is assumed that trust, dependence and contract are the most important mechanisms underlying relationship development and that they can indirectly explain why companies choose their partners, stick together and become successful. To investigate this proposition, the central research questions are formulated as follows:

1. How do interorganisational relationships develop over time?
2. What roles do trust, dependence and contract play in interorganisational relationship development?
3. How do trust, dependence and contract influence the relational and technological success of the relationship?

1.3 Contribution to the body of knowledge

Economic exchange relationships, as well as the role of dependence and contract, have been well described and examined by transaction costs economics (TCE) (Williamson 1975, 1985). Therefore, TCE is taken as the theoretical point of departure for this thesis. For the analysis of, in particular, technological IORs though, TCE thinking has been much criticised. This criticism centres around the static nature of the theory, the basic proposition of opportunism and its limited applicability in a technological setting. Therefore the TCE approach will be supplemented by dynamic IOR theories (Ring & Van de Ven 1994, Larson 1992, Nooteboom 1996) and by theories of social exchange (Zand 1972, Macneil 1980). By combining insights from transaction costs theory, dynamic and social exchange perspectives on interorganisational relationships, this study aims to:

1. Add to the development of transaction costs theory by bringing trust and dynamics into the TCE framework.
2. Test the TCE framework in a technological setting, a setting for which the theory is considered unsuitable.
3. Add to the discussion on the content of trust and its function in economic exchange relationships.
4. Add to the dynamic theories by testing and adjusting the developed models of IOR development.

In recent years, an increasing number of researchers have been working on the integration of trust (Bradach & Eccles 1989, Chiles & McMackin 1996, Nooteboom 1997, Zaheer & Venkatraman 1995) and dynamics (Ring & Van de Ven 1994, Larson 1992, Nooteboom 1996) into the TCE framework. This study will continue in line with these studies. An important question when combining different theories is always whether the basic assumptions underlying the theories are combinable. Many scholars think that transaction costs economics and trust are incompatible because of the basic assumption of opportunism in TCE. In transaction costs economics, opportunism is defined as self-interest seeking with guile. Williamson explains this assumption as that one never knows for sure whether a business partner can be trusted and that one should therefore always safeguard transactions to the maximum possible. The explanation is

clear though on the fact that most parties will not show opportunism and hence room for trust is present alongside opportunism. The main problem rests in the assumption of self-interest seeking. If partners have a friendly and trusting relationship, one could argue that parties do not act according to self-interest, but to joint or even each other's interest (altruism). To solve this problem a choice has to be made. Although it may be possible that parties act altruistically in business relationships, it seems safer to assume that most relationships are based on self-interest because each company has to survive in the long run. Short term altruistic behaviour may serve long term self-interest and thus self-interest remains the basic assumption. Because social exchange theory uses this same basic assumption in the study of social relationships (in the concept of reciprocity), social exchange theory was chosen as the basis for the discussion on trust. Although the benefits of reciprocity are more broadly defined than economic gains only, self-interest is central.

1.4 Contribution to practice

As mentioned earlier, most studies on interorganisational relationships lack the notion of dynamics. For policy makers who wish to stimulate interorganisational relationships to enhance the competitive strength of their industries, this means that they might focus on the pieces of the puzzle to enhance cooperation without taking into account the glue that keeps them together. By taking a static picture they might overlook the complex, dynamic reality that accompanies interorganisational relationships. This might also imply that government support is directed towards the static rather than the dynamic aspects of the relationships. This need not only hinder the success of government policy, it can also place emphasis on the less relevant aspects of the relationships. Likewise, managers and entrepreneurs who aim to establish and maintain successful interorganisational relationships might benefit from the presented insights into the dynamics of IOR development and organise their relationships taking these lessons into account.

1.5 Research methodology

The research questions that form the red thread through this thesis are how IORs develop over time, what role trust, contracts and dependence play in this development, and how these mechanisms relate to the success of these relationships. Therefore, first, an insight into the development process of IORs is required. Second, insight is needed into the specific content and function of the different ordering mechanisms. Third, the influence of the mechanisms on IOR development and success needs to be analysed. These three questions can be envisaged as a three constitutive steps that lead the research from a first exploratory look at IOR development to a formal test of hypotheses concerning the influence of trust, contract and dependence. The process of IOR development will first be described after which the influence of the different ordering mechanisms will be examined.

A three-step process

These three steps also require different research methods. In general, a combination of research methods is considered problematic because the choice of a certain research methodology is related to the ontological 'belief' of the researcher. This belief centres on the question whether an objective reality exists and can be known, and whether this reality has a law-like character. Two extreme opinions can be distinguished on these questions; at one end positivism and at the other subjectivism or social constructionism. The positivist school of thought is build on a basic belief that an objective, law-like reality exists, scientific knowledge can be built by induction, and observation can be objective and value-free. The other end of the continuum, represented by the subjectivist stream of research, instead claims that reality cannot be objectively known or measured. They state that human beings are not rational and not 'governed' by law-like structures, that subjectivity plays an important role in observations, ruling out the possibility of objective, value-free observation. Furthermore, they state that different 'truths' about reality can co-exist since no objective reality can be known.

Traditionally, these opposing views on reality guide the choice of research method. In such an either/or choice, quantitative data gathering is associated with the positivist view and qualitative research with the subjectivist paradigm. In this thesis such considerations have not determined the research method. Instead, a view on reality is adopted that acknowledges limitations in the pursuit of an objective reality but at the same time tries to discover patterns or probabilistic relationships between IOR characteristics and IOR development and success. This way of approaching 'reality' is closely related to the functionalist paradigm as defined by Burrell & Morgan (1979). This paradigm lies between the positivist and the subjectivist way of conceiving reality in that it argues:

> "... that society has a concrete, real existence, and a systemic character oriented to produce an ordered and regulated state of affairs." It ... "focuses on understanding the role of human beings in society. Behaviour is always seen as contextually bound in a real world of concrete and tangible social relationships. The ontological assumptions encourage a belief in the possibility of an objective and value-free social science in which the scientist is distanced from the scene which he or she is analysing through the rigor and technique of the scientific method" (Burrell & Morgan 1979).

In this quotation it is important to notice that the authors have a " … belief in the possibility of an objective and value-free social science". The choice of the words 'belief' and 'possibility' reflect their awareness of the difficulties that the objectivist researcher faces in a social world in which perceptions and interpretations play an important role. These perceptions indeed form the basis on which people build their understanding of reality and base their actions. These perceptions may be falsified though by experience and by confrontation with an actor's environment (e.g. the perceived market potential versus the real market potential, the perceived trust between partner versus opportunistic behaviour). Penrose had already discussed this view on reality in 1959 by stating that:

> "…, the environment is treated, in the first instance, as an 'image' in the entrepreneur's mind of the possibilities and restrictions with which he is confronted, for it is, after all, such an 'image' which in fact determines a man's behaviour; whether experience confirms expectations is another story " (Penrose 1959:5).

Following from this discussion, the conclusion was drawn, for this thesis, that both perceptions and law-like patterns were important for understanding IOR development. Therefore, the aim was to use a triangulation methodology, combining both qualitative and quantitative data gathering. This would enable attention to be paid to both the investigation of complex interactions and perceptions and to testing of law-like models. Furthermore, the combination of methods could be used to reduce the drawbacks of the individual research methods.

Drawbacks of qualitative and quantitative research methods

The largest problem of qualitative research lies in its reliability and generalisability. In doing qualitative research the researcher builds up his own personal understanding of a situation and the question is whether this 'wealth of experience' of the participant observer is reliable (Vidich & Shapiro 1970:520). The question of reliability addresses two aspects. The first is whether the same results would be obtained if the research was repeated. The second is whether the results would be the same if the research was conducted by another researcher. To make the results more reliable the qualitative researcher can make use of the increasingly well developed qualitative methods such as coding and deconstruction (Strauss & Corbin 1990), case protocols (Yin 1995), and case survey methods (Brytting 1993). The use of these methods makes it possible for independent people to verify methods, findings and interpretations. The problem of generalisability remains. Because observations only concern one, or a few, cases, no general conclusions should be claimed.

In quantitative research the problem of reliability is easier to address. To ensure the reliability of the study, questionnaires can, for example, be pre-tested, observers and interviewers can be trained and interviewees can be informed (Davis 1971). As mentioned before, here the problem of validity is more significant. In quantitative research a phenomenon is labelled, defined and operationalised so that it can be measured using numbers and scales. The question of validity now concerns the legitimacy of the translation steps that have been made. In other words, do we measure what we intended?

Triangulation

The point of departure in triangulation methodology is the assumption that these drawbacks can be solved by combining both methods. Instead of assuming that one method is better than another Denzin (1970) wrote:

> "No single method is always superior. Each has its own special strengths, and weaknesses. It is time for sociologists to recognise this fact and to move on to a position that permits them to approach their problems with all relevant and appropriate methods to the strategy of methodological triangulation" (Denzin, 1970:471).

Triangulation is defined as the combination of methodologies in the study of the same phenomenon (Denzin 1978:471). By looking at a phenomenon using different methods, one can ensure that the variance or observation reflects the trait of the phenomenon and not the method used (Jick, 1979:602). The basic premise of the triangulation methodology is thus that the weakness of one method can be compensated by the strength of the other.

In this thesis a 'pure' triangulation methodology is not used, although the method used is inspired by the triangulation argument. In this thesis two methods will be used to find answers to the three research questions. Since methods are always more suited to one question than another, the methods were partly used affirmatively (as required in pure triangulation) and partly complementarily (which is not part of triangulation). To describe the dynamic development of IORs (questions 1 and 2), a qualitative methodology is better suited because it enables the analysis of developments, and perceptions of - and reactions to - these developments. The influence of the ordering mechanisms on IOR development and success (questions 2 and 3) can be approached by quantitative analysis, since this enables the description of significant relationships between ordering mechanisms, IOR characteristics and success. Because only question 2 is explicitly addressed in both qualitative and quantitative data gathering, whereas question 1 is mainly addressed qualitatively, and question 3 in quantitatively, I prefer to talk of a three-step method rather than triangulation.

1.6 The three-step methodology

As was justified in the previous paragraphs, a three-step method will be used to find answers to the research questions. These steps and their content are described below.

Step 1: TIMP - a longitudinal case study

The study was begun using a qualitative research methodology to discover the way in which interorganisational relationships develop over time, and the way in which the different ordering mechanisms influence this dynamic development. According to Yin (1995) qualitative research is especially useful in answering how and why questions and questions for which no clear theories or hypotheses are formulated. As discussed earlier in this chapter, there are only a few authors that address interorganisational relationships as a dynamic phenomenon. In this field there is still much to be done. Therefore, firstly a longitudinal case study was conducted to obtain an in-depth understanding of how IORs have developed over time. The study was conducted in the TIMP-network; the Twente Initiative for the development of Medical Products. The longitudinal case description was structured according to the developed frameworks of Ring & Van de Ven (1994) and (Larson 1992). The framework was translated into a case-protocol to ensure the validity of the data analysis. This protocol can be found in the appendix. The protocol mainly addresses

questions as to how the various relationships came into being (previous exchange, reputation, shared vision on opportunities) and how the relationships developed over time. In each interview TIMP participants were asked to describe the general network developments and the relationship between their company and specific other companies. The questions would always refer to the company, as well as the personal interactions, to ensure that data on both economic and social factors were obtained.

The case analysis' focus on the different ordering mechanisms in IOR development, was based on insights from Ring & Van de Ven (1994) and Nooteboom (1996). To obtain an insight into the influence of trust, dependence and contract, use was made of personal observations and interpretations. Furthermore, the respondents were asked to give their opinion on the role of trust, dependence and contract in TIMP developments and were asked to give their opinion of my interpretations. This was done it the later stages of data gathering in order not to influence TIMP developments (March 1998 - March 1999).

To ensure the reliability of the case study, a case protocol was used, interviews were administered and regular feedback on preliminary findings was sought from relative outsiders (representatives of the agencies involved with stimulating and subsidising TIMP). Open interviews were used in which the participants of the TIMP network were asked for their personal experiences in the network as a whole, and specifically with the other participants. These personal data were complemented by the written documents that were available about the TIMP network (e.g. minutes, administration, project plans, publications). The factual occurrence of events was, as far as possible, derived from the written data (project plans, project execution, minutes of meetings, date at which decisions are taken, financial administration) whereas the way people experienced and interpreted events was derived from the personal interviews.

To obtain the necessary data, all general meetings were attended over a three year period. In these meetings it was possible to observe group-interactions and to get to know the different actors and their way of seeing things. Additionally, several meetings of the daily board were attended to get an insight into how decisions were made. Furthermore, the general administration of TIMP, the financial administration, the several project administrations and the minutes of meetings were all summarised and analysed over the three-year period. A major aim of this thorough data collection was to get the best possible insight into the development of the relationships, both formal developments (written data) and informal developments (group observation, personal interviews).

Step 2: Documentary case analysis of seven high tech IORs

In the TIMP case, the maximum possible data are obtained to reconstruct the development of the IORs within the TIMP network. The description of this development is comprehensive and the analysis of the different ordering mechanism exploratory. The second step in the research entails the analysis of seven more cases using the same case protocol as in the TIMP case. Because less data were accessible on the cases, and because the analysis would be more testing and less exploratory, the case protocol was reduced in size and more structured (see paragraph 6.3). A major aim of this second step was to verify whether the same developments and

influences as found in the TIMP case could also be found in other cases in a technological setting. The findings of steps 1 and 2 could, as a result, serve to formulate testable hypotheses combining the insights from theory (the frameworks used for description and analysis) and practice (the case studies).

Since one of the aims of this study was to test the applicability of TCE (Transaction Costs Economics) based IOR theories in a technological setting, the cases were all set in a high technology environment. The interorganisational relationships included at least two partners, varying from very small companies (<10) to large ones (>500), all characterised by their technological sophistication. The companies jointly developed new products, processes or technologies in biotechnology, new materials, chemicals, maritime- or environmental technologies. A factor that might colour observations is that all the projects were subsidised by the Dutch government. Subsidy might have played a role in the motives for starting the project (cheap money) and it might also influence the way in which the IORs develop. Another important characteristic of the data gathered was that the only documents that could be analysed were those administered by the subsidising agency. Because of the confidential character of both the project and the cooperative relationships, the companies could not be contacted personally. To compensate for this, the advisors of the subsidising agency who had been personally involved in the projects, were asked to check the findings derived from the document analysis.

To get as much information as possible on IOR development, the different ordering mechanisms and their relationship to success and failure, eight successful and eight unsuccessful projects were identified and analysed. Success was, for this, predominantly understood to be the willingness to continue the relationship. The technological success of the project was given a less central role. Data collection included examination of the:

- project plan describing the goal of the project and ways of achieving this,
- contract written by the participants,
- project evaluation of the progress made each six months,
- comments by the project advisor (advisors of the subsidising agency who monitored project progress),
- feedback on preliminary findings by the project advisors.

Because of the regular project progress evaluations insight could be gained into the dynamic IOR process and longitudinal case description and analysis became possible. These insights could be complemented with insights from the project advisor. This advisor did not fulfil the role of a consultant during the project. The advisor would only oversee the projects to check whether project evaluations were handed in on time (each half year) and whether the subsidising conditions were met. Because documents also contained data on the type and size of investments made by the parties, and on the type of legal arrangements, the influence of dependence and contract on IOR development could be analysed. In most cases hints could also be found on the personal developments in the relationship, i.e. on trust and opportunistic behaviour. Here it was a distinct disadvantage, though, that the companies could not be approached personally. The project advisors were asked to explain the way the personal relationships had developed.

Not all the selected cases are presented in this thesis. Some cases are excluded because documents were incomplete. Other cases did not contain enough elements to be useful illustrations of IOR development and the influence of trust, dependence and contract in this development. Lastly, some cases did not contribute more than that already found from other cases. As a result, seven cases were selected for presentation in this thesis.

Step 3: Hypotheses testing in a sample of 391 high tech IORs

In the third step of the research, a questionnaire was constructed. For the questionnaire, the most important concepts from theory and case analysis were operationalised (see chapter 7). The questions included were, as much as possible, based on validated questionnaires (e.g. Nooteboom, Berger & Noorderhaven 1997, McAllister 1995, Cainarca, Colombo & Mariotti 1992, Green & Gavin 1995). This was to guarantee the validity of the operationalisation as much as possible.

The selection of cases was made on a pragmatic basis. From a large database on cooperative high technology projects, cooperative projects were selected that had either been recently completed or were in the last phase of their development. This selection ensured that people that had been championing the project could still be traced and that they could still remember project developments vividly. A disadvantage of this choice was that not all the projects were finished and that data on project outcome (success, failure) were not always present. Using these criteria, 648 cases could be selected in the areas of biotechnology, new materials, chemicals, information technology, maritime and environmental technologies. These 648 contacts eventually led to 391 interviews. The response statistics are presented in Table 1.1.

Initial sample	**648**	
No connection / false telephone number, number missing	24	
Address twice in data base / other	18	
Project champion has left the company	6	
Not a cooperative project / project not known	28	
Total basis for response	**572**	**100%**
Project champion not found within data collection period	115	20%
Respondent only wants to answer in written form	6	1%
Respondent does not want to cooperate in the research	60	10.5%
Total sample response	**391**	**68.5%**

Table 1.1 Non-response of survey research.

The percentage of the respondents that refused to cooperate with the telephone survey was very low considering the experience of the market research agency is that, on average, the non-response rate is between 65% and 75% with business-to-business surveys. To investigate whether the non-response, although low, still puts a bias on the research, the non-cooperative respondents were asked for their reason for non-cooperation. The reasons for refusal were on the one hand a lack of time and interest (I have no time, I am not interested, I do not feel like it, I

am too busy), and on the other, irritation because they had recently cooperated in another telephone survey and had had enough of all the questioning. Although these reasons can hide their true motive for not cooperating (e.g. an unsuccessful cooperation project), the low non-response and the reasons given for non-cooperation do not raise serious doubts that bias was caused by the non-response. The selection of projects does imply a bias. Since projects were mostly selected that had been operational for a considerable period of time, or had been recently completed, then projects that had been stopped, had failed, or that had never reached the operational phase, are not equally represented in the data. The project advisors did take this into account by also including unsuccessful projects. Their presence in the sample was still limited: 20 of the 391 IORs failed before the project goals were reached.

An external market research company was used to conduct the telephone interviews. An experienced team was selected to conduct the comprehensive interviews. The questionnaire predominantly contained closed questions. The answers were all measured on a five-point Likert scale. Some open questions were added to enliven the interview and to enable the respondents to tell their own story to some extent. An outcome of this was that the interviews that were designed to take half an hour would sometimes take up to one hour depending on the respondent

A major aim of this third step is to examine the relationship between trust, dependence and contract, and IOR development and to investigate their influence on relationship success.

1.7 Layout of the study

In Figure 1.1 the layout of this study is given.

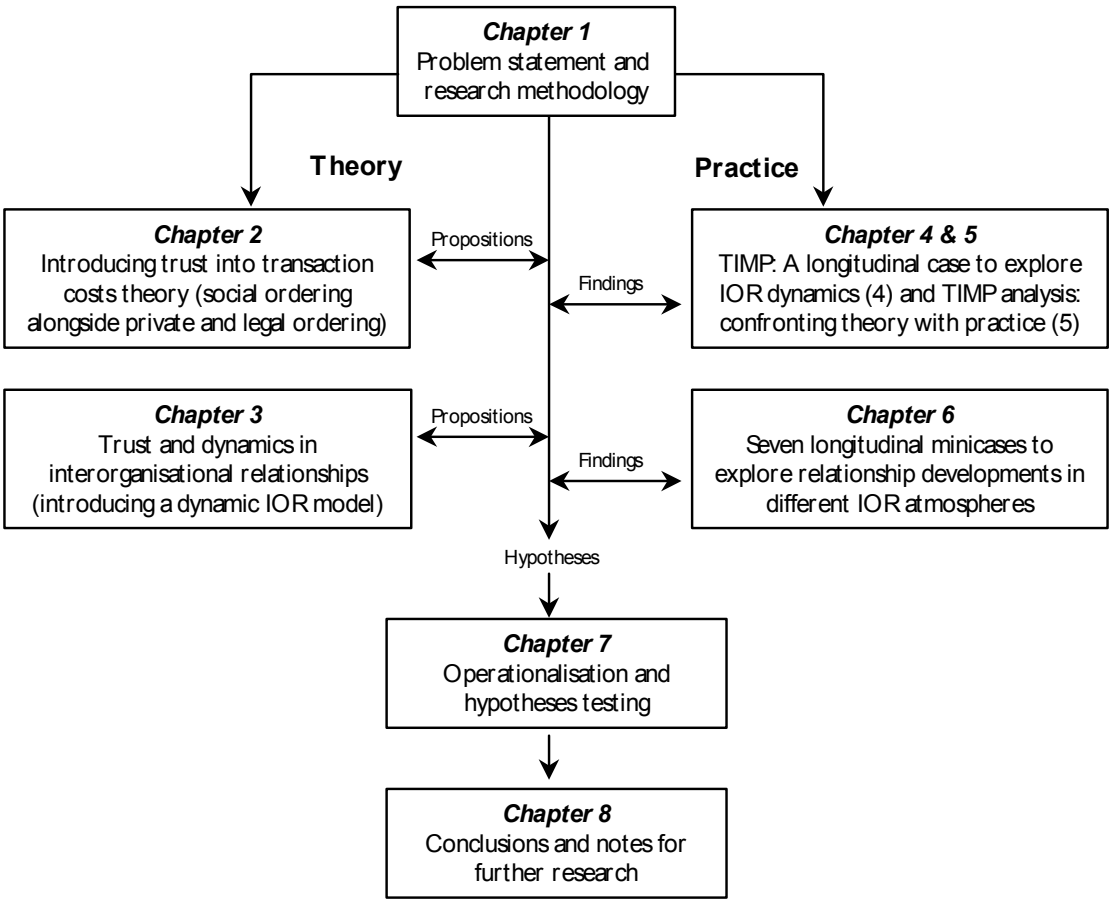


Figure 1.1 Layout of the study.

2

Introducing trust into transaction costs economics

"Businessmen have learned from experience, even though their theory and ideology are against it, that the market mechanism will not run at all perhaps, and certainly not very well, if they cannot trust one another" (Macaulay 1963:64).

2.1 Introduction

Transaction costs theory tries to explain why certain forms of governance are chosen for certain kinds of transactions[1]. Two forms of governance are distinguished: that of markets with discrete transactions and that of hierarchies in which transactions are internalised into the firm's boundaries. Interorganisational relationships are a form of governance somewhere between markets and hierarchies. The technological projects within the IORs that are central to this thesis are characterised by high uncertainty, high asset specificity and complexity. Still these transactions are not internalised as would be expected in TCE. Instead they are internalised within a network of companies that jointly share costs, risks, and benefits. By establishing close relationships, uncertainty and complexity are reduced, and costs and risks can be shared. This can be referred to as a process of external internalisation: external to the firm's boundaries but internal to the firm's network (Klein Woolthuis 1994).

Because interorganisational relationships, especially in a technological setting, do not fit properly into the markets and hierarchies dichotomy, many scholars have criticised TCE for not being able to explain close business relationships (Commandeur 1994; Piore & Sabel 1984; Powell 1990, 1994; OECD 1992).

There are three points of criticism on transaction costs thinking that are of special relevance to this thesis:

– The basic assumption of opportunism: in this thesis it is argued that opportunism can be reduced by introducing trust;

[1] This chapter is partly based on the paper 'Bringing trust and dynamics into the analysis of interorganisational relationships' by Klein Woolthuis & Hillebrand (1998).

– the static nature of TCE analysis: in this thesis a dynamic approach to interorganisational relationships is chosen;
– the applicability of TCE in technological settings: in this thesis interorganisational relationships are studied that focus on high tech product development.

When seeing these three criticisms one might wonder why TCE is still chosen as a point of departure in this thesis. These drawbacks have led other researchers, e.g. Piore & Sabel (1984), Larson (1992), Burt 1987, Granovetter 1985, and the IMP group (for example Håkansson 1987, Axelson & Easton 1992) to develop other frameworks to study interorganisational relationships and networks. The reason why I choose to stay within the TCE tradition lies in the strength of its constituting theoretical constructs. Concepts such as uncertainty, complexity, dependence on specific investments, opportunism and different types of contracting, are of crucial importance to the study of interorganisational relationships. With these powerful concepts as its basis, transaction costs theory has been very successful in explaining business relationships such as vertical integration, buyer-supplier relationships, and relational governance. Therefore I do not discount TCE explanations of interorganisational relationships, but rather propose adaptations that meet the criticisms mentioned. In this way the applicability of TCE can be increased.

In this chapter I will explore how trust can be (and has been) introduced into transaction costs economics. In the first part of this chapter, transaction costs economics will be discussed following the work of Williamson (1975, 1985). In the second part of the chapter, several articles will be discussed that have greatly contributed to the struggle to make transaction costs economics more applicable to interorganisational relationships. In this struggle, the integration of trust and dynamics into the TCE framework plays a central role. In chapter 3, trust and dynamics will be further explored. From chapters 2 and 3, a model will be derived that integrates TCE factors with trust and dynamics, thereby creating a rich framework for IOR analysis.

2.2 Transaction costs economics

Transaction costs economics can be seen as the most important offspring of new institutionalism and Williamson can be seen as the father (not the founder) of transaction costs economics (TCE). Williamson's work goes back to the earlier work of Commons (1934) who introduced the transaction as a unit of analysis, and Coase (1937) who was the first to focus on transaction cost economising as a rationale for firms to exist. The main point of departure for these theorists is that exchange, discrete or relational, has a price because of bounded rationality and uncertainty. Bounded rationality and uncertainty imply transaction costs of, for example, search of information, negotiation, contracting and monitoring. Thus, whereas neo-classical economics states that in perfect, transparent markets price carries all information and transaction costs are hence zero, Coase (1937) argues that reliance on the price mechanism requires that prices be discovered which implies at least transaction costs of searching for information.

Relational contracting (long-term contracting) carries more costs than discrete transactions (one shot transactions). The establishment and maintenance of the relationship not only includes costs of information and negotiation over quantities and prices, it also includes the costs of

drawing up long-term contracts, relationship maintenance and monitoring. Since, under the presumed conditions of uncertainty and bounded rationality, these contracts will always be limited, Coase argued that it is better to bring contracts inside the firm to economise on these transaction costs. In other words, as soon as the costs of using the market mechanism exceed those of using internal governance, the latter should be chosen as the co-ordinating mechanism (Coase 1937:336).

Basic assumptions

From this notion Williamson started to build his transaction costs theory by adopting the same line of reasoning while operationalising the proposed concepts. The main argument is that for organisations to be efficient, transactions should be co-ordinated differently under different circumstances. Here the transaction is, as in the works of Coase and Commons, the basic unit of analysis. It is defined as:

> "A transaction occurs when a good or service is transferred across a technologically separable interface" (Williamson, 1985:1).

These transferrals include the exchange of tangible products or services across organisational boundaries.

Williamson's behavioural assumptions are different from those of neo-classical economics. He focuses on contractual man (Rawls, 1983:13)[2] and adopts the idea of bounded rationality (Simon, 1961:xxiv) which is behaviour that is *"intendedly rational but only limited so"*. Further the assumption of uncertainty/complexity is adopted, meaning that transactions may contain a degree of uncertainty or complexity that makes it impossible for prices to contain all the necessary information. A situation of uncertainty and complexity can be described as one in which parties do not have complete information about the potential transaction.

Williamson adds the behavioural assumption of opportunism to the Coasian framework. He defines opportunism as behaviour that is characterised by "*self interest seeking with guile"* (1985:47). This behaviour *"refers to the incomplete or distorted disclosure of information, especially to calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse"(Williamson 1985:47).* It is hence more than simple self-interest seeking, people are also willing to lie or deceive for it. This definition should not be understood as Williamson having an extremely negative view on human nature. Williamson himself argues that *some* people are *sometimes* opportunistic and since one has limited information ex ante of whether, and when, this will occur (because of bounded rationality, uncertainty and costs associated with eliminating these) it is better to safeguard every transaction to the maximum.

[2] Referred to in Williamson, 1985:43.

2.3 The organisational failures framework

From these basic assumptions, Williamson has built his market failure framework. In situations of bounded rationality, uncertainty/complexity and opportunism, the market is not able to capture all information and hence transaction costs occur. He uses the machine metaphor to illustrate the occurrence of transaction costs, by claiming that what is friction in machines is the transaction costs in the economy. The organisational failures framework is illustrated in Figure 2.1.

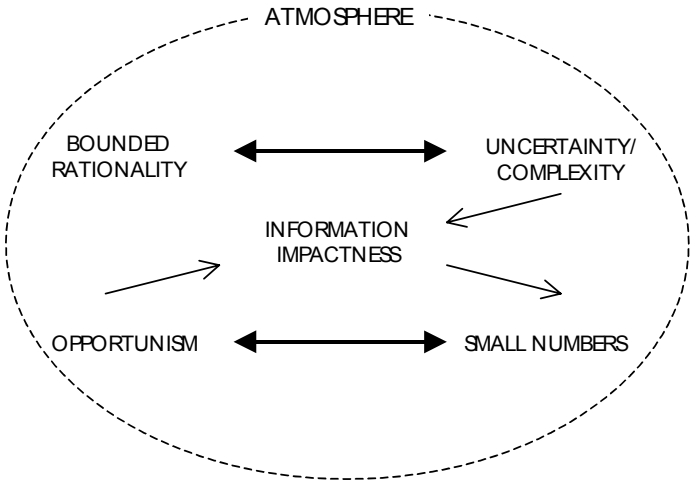


Figure 2.1 The organisational failures framework (Williamson 1983:40).

The problem of opportunism only occurs in a small numbers game and if there is a limited number of potential partners. This is because if there is a small number of trading partners, these have to worry about their reputation. If there is only one seller, reputation does not play a role because there is no alternative. At the other extreme, where there are numerous buyers and sellers, a bad reputation of one partner or region can be compensated for by picking a new, anonymous partner.

Likewise, bounded rationality plays a role only when there is a situation of uncertainty and complexity. Buying bread is a very simple transaction where neither uncertainty nor complexity play a role. Transactions aimed at buying a new, technologically complicated, machine on the contrary are characterised by large uncertainty and complexity.

The term atmosphere refers to the fact that participants in a transaction do not always value cost minimising or economising (on for example scale or information) most. They may value other characteristics of a transaction more. For example, these characteristics could be independence, innovativeness, or learning. Williamson (1975: 38) states, in this respect, that:

> "… it may be more accurate, and sometimes even essential, to regard the exchange process in itself as an object of value. Concern for atmosphere tends to raise such systems issues; supplying a satisfying exchange relation is made part of the economic problem, broadly construed."

The atmosphere considerations may be so important that parties prefer less efficient governance structures over those that would limit for example their independence or opportunities for learning.

2.4 The transaction costs framework

The transaction costs that arise due to the factors mentioned in the organisational failures framework can consist of misunderstandings, conflicts, breakdowns, malfunctions and delays (1985:2). Transaction costs theory tries to examine the comparative costs of planning, adapting, monitoring task completion under alternative governance structures (Williamson 1985:2). In transaction costs theory, the choice of a certain form of organisation is determined by three dimensions:

- Asset specificity, which refers to the degree to which investments in the relationship are non-redeployable, without loss of productive value, should the relationship be terminated;
- the frequency in which transactions between parties occur, and:
- the uncertainty and complexity of the transaction determining the degree to which information can be captured in market prices.

Every transaction can be described using these characteristics. For example, the construction of a plant only occasionally takes place and requires highly specific or idiosyncratic investments (the plant's setup should fit the company specific requirements). On the other hand, printing paper should be purchased regularly and is non-specific. The different sorts of transactions are shown in Table 2.1.

		Investment Characteristics		
		Nonspecific	Mixed	Idiosyncratic
Frequency	Occasional	Purchasing standard equipment	Purchasing customised equipment	Constructing a plant
	Recurrent	Purchasing standard material	Purchasing customised material	Site-specific transfer of intermediate product across successive stages

Table 2.1 Transaction characteristics (Williamson 1985:73).

TCE now explains, prescribes or predicts the form of governance that is best suited for the transaction. These vary from market transactions to bilateral and relational contracting. The main message is that, the more specific investments are, the more frequently they occur, and the more uncertain and complex they are, the closer should be the relationship between the partners. This can be achieved by establishing long-term relationships supported by extensive contracting (relational contracting) or for example, by establishing close links by establishing a joint venture (bilateral governance). The optimal forms of governance are illustrated in Table 2.2.

		Investment Characteristics		
		Nonspecific	Mixed	Idiosyncratic
Frequency	Occasional	Market governance (classical contracting)	Trilateral governance (neo-classical contracting)	
	Recurrent		Bilateral governance (relational contracting)	Unified governance

Table 2.2 Efficient governance (Williamson 1985:79).

2.5 Private and legal ordering

In the foregoing section I discussed that the more specific investments are made, and the more uncertainty/complexity exists, the closer the relationship between partners should be governed. Because the occurrence of opportunism cannot be predicted, safeguards should be built-in to protect against opportunism. Safeguards can furthermore provide leads to deal with unwanted change that could not be predicted beforehand. For these functions, TCE explicitly focuses on the use of safeguards (Williamson 1985). Vertical integration is the typical TCE safeguard but may be supplemented or replaced by contracts, shared ownership, guarantees and hostages (De Jong 1999). Because safeguards can enforce certain types of behaviour they can also be understood as power mechanisms (Blau 1964). The power of actor A over B is defined "the amount of resistance on the part of B [that] can potentially [be] overcome by A" (Emerson 1972)[3]. These safeguards are also referred to as ordering mechanisms. Nooteboom 1996 distinguishes between legal ordering, referring to contracts and other legal sources of governance, and private ordering which refers to the relative value (and power) partners have and use to govern their relationships. Both legal and private ordering mechanisms serve as a potential basis on which to exercise power. The power of one organisation over another implies two antecedents: (1) relative dependence and (2) contract and monitoring (Nooteboom 1997).

Relative dependence

Power is inversely related to dependence: the greater the dependence of B on A, the greater the power of A over B (Gaski 1984, Nooteboom 1996). Without B being dependent, A has no basis on which to exercise power because B will have alternative options to turn to, and can ignore threats of sanctions. Relative dependence may be based on one or more of the following antecedents: (1) transaction specific investments, (2) relative value and (3) formal control (Nooteboom et al. 1997).

Transaction specific investments (investments that cannot be redeployed without loss of productive value if contracts should be interrupted (Williamson 1975)) make it harder to switch to another partner. These so-called switching costs keep a firm locked-in to a relationship that leads to

[3] Words between brackets are added by the author.

dependence by the firm that has made these investments. The relatively less dependent party will, as a result, have more bargaining power (Anderson & Narus 1990, Macneil 1978).

Relative value refers to the surplus value an organisation has for its partner in proportion to alternative partners (Nooteboom 1994). The relative value for a partner may be based on assets such as technological skills, production facilities, market knowledge, access to distribution channels or intangible assets such as image or brand name. The more unique and crucial these assets are to a partner, the higher the relative value and hence the dependence will be. The relationship can be changed (or governed) by adapting the relative dependence between partners. A party can, for instance, invest in highly specialised knowledge thereby making its partner more dependent. This is referred to as the mechanism of private governance.

A third basis for relative dependence is formal control, i.e. authority based on formal agreements such as contracts, licensing agreements or majority ownership. Formal agreements enlarge the dependence of the partners on each other and form the basis for the use of formal authority mechanisms such as sanctions and court resolution. This is referred to as the mechanism of legal governance.

Contract and monitoring

Next to relative dependence, a second prerequisite for obtaining a power base is needed: the ability to monitor the behaviour of the partner. Monitoring is supervising and judging the realisation of the contract (Nooteboom 1994). It provides a firm with the possibility to see whether its partner deviates from the (implicit or explicit) agreements. Without monitoring, one does not know the actual behaviour of a partner and cannot therefore apply sanctions accordingly.

The establishment and execution of contracts implies ex ante and ex post transaction costs. Ex ante costs include the costs of drafting, negotiating, and safeguarding an agreement. In completing a contract these costs might be very high because all contingencies have to taken into account which is a complex, and sometime even impossible task. In incomplete contracts, the gaps in the agreement are filled as contingencies arise, offering less certainty but more flexibility in the execution of the agreement. Ex post transaction costs include:

- Maladaptation costs when contracts have to be adapted to changing contingencies;
- haggling costs to correct misalignments;
- setup and running costs of governance structures to which disputes are referred (which are often not the courts);
- bonding costs of effecting secure commitments.

In Williamson's transaction costs framework, contracts are necessary because of the assumed opportunism, asset specificity and bounded rationality. If opportunism could be guaranteed to be absent, a promise would suffice to make an agreement. In the same way that planning would suffice in a situation where partners are completely rational and informed and the future could thus be predicted. But, in a situation of bounded rationality, opportunism and asset specificity, safeguarding a relationship is required. The message that prevails is "Organise transactions so as

to economise on bounded rationality while simultaneously safeguarding them against the hazards of opportunism" (1985:32).

2.6 Trust as an alternative governance mechanism: Social ordering

Whereas, in the traditional conception of transaction costs economics, vertical integration, contracts, and monitoring are considered to be the main instruments to cope with complexity, uncertainty and opportunism; sociologically oriented streams of research focus on trust as an alternative mechanism. If trust is translated into an active instrument to influence and control interorganisational relationships, it refers to the action of A in (consciously) building a trust relationship with B. By establishing trust, B will more likely do things that he would not do otherwise because he now trusts A. This enables trust to be interpreted as a governance mechanism that has a similar effect as power i.e. to make B do something he would not do otherwise. This was also emphasised by Bradach & Eccles (1989) who described trust as an authority mechanism, or a norm of obligation. The way in which trust influences behaviour is, however, distinct from the classical, power-based governance mechanisms.

Private ordering, related to relative dependence can enforce behaviour on a party because its dependence gives it no other choice. Legal ordering, for example contracts, can enforce behaviour by the threat of court or legal sanctions. Trust, in turn, is different because behaviour is not enforced, but voluntarily chosen. Trust is related to norms, values, friendship, loyalty and routines that positively influence and govern a relationship. The trust between partners can increase their willingness to commit to each other, to invest in the relationship, or to solve problems in a constructive way. Trust can also form a basis on which to call upon, if one wants to change the way in which the relationship develops. This can, for example, be done if a partner wants to dissolve the relationship by calling upon past experience, bonds of friendship, loyalty or ethics. The presence of trust, in itself, will also influence the relationship. It can for instance increase openness, loyalty and flexibility without actively being called upon. The characteristics of the different ordering mechanisms are summarised in Table 2.3.

Governance	Legal	Private	Social
Means	Contract Monitoring Court	Balanced dependence Negotiation Third party intermediation	Trust, norms & values Moral obligations Reputation
Drawbacks	Difficult to write contracts ex ante with uncertainty. Extensive contracts are costly, inflexible and time consuming.	Costly to build and maintain relative dependence i.e. a power base on which one can negotiate.	Requires long time-span. Inertia flowing from long term relationships. Whom to trust?

Table 2.3 Legal, private and social ordering.

Legal, private and social ordering do not function in isolation. They influence each other and change each other's applicability. It is argued that trust decreases the need for contract, for monitoring

(Nooteboom 1996) and for vertical quasi-integration (Bradach & Eccles 1989). Furthermore trust changes the need for private ordering by decreasing the need for material incentives for cooperation (Nooteboom 1996) and decreasing the perception of dependence (Zand 1972). The use of private or legal ordering mechanisms can, on the other hand, also change the applicability of social ordering. The use of coercive power (private or legal) has a negative influence on the development of trust in the relationship. Gaski (1984), Hunt & Nevin (1974) and Lush (1976) pointed out that the use of coercive power leads to an increase in conflict. Zand (1972) and Hirschman (1984) described how the use of power provokes defensive behaviour. Goshal & Moran (1996: 24) even argue that by establishing hierarchical controls a self-fulfilling prophesy is created because monitoring is a signal to the controlled partner that it is neither trusted nor trustworthy. This will evoke defensive behaviour by the monitored partner and, as a result, more coercion will have to be used to achieve the same control (Hirschman 1984, Goshal & Moran 1996). In short, if coercive power is used to govern the relationship, it will no longer be possible to call upon social mechanisms such as trust and loyalty.

The presence of power in itself, though, does not have a negative effect on the relationship, as power also has its roots in many non-coercive sources. Such sources are referent and expert power which are closely related to the trustworthiness of actors and do not include coercive elements (French & Raven 1959:155). It is the actual use of coercive power sources i.e. reward, coercive, and legitimate power (French & Raven 1959) that negatively affect relationship development by evoking for example defensive behaviour and conflict (Gaski 1984, Zand 1972).

From the discussion it can be concluded that the use of power has its limits. As Hirshmann (1984) has already argued, power wears out by its usage. Although the use of power has mostly a negative influence on the development and continuity of a relationship, its use can also be just and useful. For instance, if there is a threat that a letter of intention will be broken, one can call upon the contract to enforce the execution of the deal as agreed. And trust also has its limits. Trust is very hard to build up. Partners have to invest time and effort in the development of trust in a relationship and trust may prove very fragile if it is put to the test (for example if a more attractive partner appears). Furthermore, trust may lead to inertia, when partners remain together on emotional grounds (e.g. they have been doing business for over 20 years) without there being any economic incentives for the cooperation (e.g. the partner's price is too high, or the quality low). In short, legal, private and social ordering have their own characteristics, advantages and disadvantages.

In general, trust can be considered as a positive way of influencing the development of a relationship. Therefore it is important to know more about its content and function. The exact meaning and functioning of trust are difficult to grasp though (see Boersma 1999, Blomqvist 1994, 1995, Gulati 1995, Mayer, Davis & Schoorman 1995, McAllister 1995, Zucker 1986). As discussed in this first part of this chapter, TCE focuses on legal and private ordering mechanisms to govern interorganisational relationships. A number of authors also acknowledge the importance of trust, as replacing or complementing these classical governance mechanisms. In the next section I will discuss several authors' contributions that have been important in the discussion on how trust replaces or complements TCE. The papers are chosen because in them, as in this thesis, TCE is chosen as the point as departure and because their contribution lies in

complementing, instead of rejecting, economic reasoning. The authors have tried to enrich the explanatory value of TCE by introducing elements from sociology and social exchange theory. The papers contribute to this thesis by explicitly addressing the question as to how social thinking can complement economic thinking, and how interorganisational relationships can be better explained by using both perspectives. I have chosen contributions that chronologically and theoretically follow, and build on, each other. In regard of the papers I will discuss how they relate, build on, or differ from each other, how they relate to the transaction costs framework, and how they contribute to this thesis by revealing parts of the meanings and functions of trust.

2.7 Literature review

The review starts with Macneil, who was one of the first to draw attention to the social aspects of economic life and therefore the social character of contract and exchange relationships. I end with Nooteboom (1996) who was one of the first to develop a dynamic model in which trust and opportunism co-exist, and in which legal, private and social ordering mechanisms are present and can change the relationship. I will adopt elements from all the papers, but I will use Nooteboom's work as my point of departure, since he is the first to conceptually combine trust and dynamics with the classical TCE framework. In so doing he tackled two of the most important criticisms of transaction costs economics: the basic assumption of opportunism, and its static nature. But let us start at the beginning and follow the arguments to see the way in which the discussion has evolved.

Macneil 1980

As can be deduced from the previous discussion, transaction costs economics explicitly focuses on the economic and legalistic aspects of business transactions. It does not take into account the social context in which the transactions and relationships take place. In his 1980 book "The New Social Contract" Macneil explicitly calls attention to the social aspects that accompany business transactions and contracts. He also claims that contracts, as presumed in classical and neo-classical economics, actually do not exist, because they are cut loose from their social context and meaning (1980:xii).

Macneil starts his argument for the new social contract by stating that *"In the beginning was society" (1980:1).* Although this might seem an open door, it carries a strong message concerning the basic view of economic organisation. Macneil wants to emphasise that one of the most forgotten facts in modern studies of contracts and the economy is that the economy is embedded in society as a whole. Discrete transactions are in this world-view inconceivable since:

> "... contract between totally isolated, utility maximising individuals is not contract, but war; contract without language is impossible; and contract without social structure and stability is - quite literally - rationally unthinkable, just as man outside society is rationally unthinkable (1980:1)".

Macneil therefore argues that there are four fundamental roots of a contract. The first is its social embeddedness in society. Second is the specialisation of labour which makes exchange necessary. Third is the freedom of choice of actors to select between a range of behaviours[4]. Fourth is the function of contracts to make it possible to project exchange into the future (Macneil 1980:4). Emphasis is placed though on the fact that although discrete transactions are fully displaced as the relationships take on the properties of a *"minisociety with a vast array of norms beyond those centered on the exchange and its immediate processes" (Macneil 1978:901)*, people still reason according to the 'laws' of discrete exchange. In other words, actors think both discretely and relationally; they are at the same time selfish individuals and integral parts of a social unity (Macneil 1980:12). Contracts therefore reflect the same interconnectedness between (intentionally) rational economic thinking and relational reasoning between people[5].

Another aspect of contractual relations that Macneil stresses is dependence. Due to the high level of division of labour and specialisation, each specialist depends on others for complementary goods and services. Since this dependence is mutual, both parties have a power base from which to negotiate prices and exchange conditions. Because exchange requires compromise to come to an agreement, for the individual the solution is always sub-optimal. How much a party has to compromise depends upon its relative dependence (Macneil 1980:33) and hence the power of the other partner(s). According to Macneil, power cannot only be achieved through uniqueness of a partner or resource abundance. It can also be achieved through the level of organisation (e.g. forming a coalition), the possession of information (information asymmetry), hierarchical control, authority or negotiation capabilities.

In short, Macneil makes us aware of the very rudimentary character of contracts in economic exchange. In his argument contracts are not only the legal writings that lay down the agreement between economic actors. Contracts should rather be envisaged as the formal and informal agreements that characterise the relationship between socially embedded actors. Although Williamson relies heavily upon the contractual distinctions made by Macneil, he does not explicitly consider social virtues in his transaction costs framework. The insights offered by Macneil, though, support the importance of placing greater emphasis on social aspects in the study of exchange relationships.

[4]The author points out that choices need not be real, only that we act as if they were.

[5] Williamson builds on these insights when introducing his concept of relational contracting, and building his framework of efficient governance (Williamson, 1985:71-79), formulating a continuum from classical, discrete contracting to relational contracting.

What to learn from Macneil 1980
– Although discrete transactions do not exist, because of relational elements and their embeddedness in society, people still reason according to the 'laws' of discrete exchange
– Contracts reflect this interconnectedness between rational, economic thinking and relational reasoning
– Power and dependence determine the room for negotiations in contractual relationships

Ouchi 1980

Ouchi's (1980) classical Administrative Science Quarterly article "Markets, bureaucracies and clans" can, just as Macneil's "The new social contract", be interpreted as a plea for the inclusion of 'society' into the organisation of economic activity. It addresses the same classical question as the work of Williamson i.e.: Why do firms exist? In answering this question he builds on the work of Coase (1937) and Williamson (1975) by applying efficiency considerations as one of the main reasons for firms to exist. He departs from their reasoning though, by stressing that organisations are comprised of individuals with only partly overlapping interests. Because these interests are not congruent, bargaining processes takes place in which people want a fair return for their exchange. Reciprocity is therefore the basic assumption in his work[6]. In markets, reciprocity and equity are taken care of by the pricing mechanism. In bureaucracies (or hierarchies in terms of Williamson), prices are mediated and contributions are fairly compensated for by the authority mechanism (staff, managers). Like Williamson, Ouchi stresses transaction costs and describes how different modes of governance fit to various situations. His argument differs from TCE by adding the importance of social factors and placing reciprocity and equity over efficiency.

Ouchi defines transaction costs as the costs that are *"engaged in to satisfy each party to an exchange that the value given and received is in accord with his or her expectations"* (Ouchi 1980:130). The mode of governance that should be chosen depends on the level of performance ambiguity and goal incongruence. Besides markets and hierarchies, Ouchi signals a third option: that of socialisation. If individuals in an organisation are socialised they form a clan. A clan has been defined by Durkheim (1933:175)[7] as an *"organic association which resembles a kin network but may not include blood relations"*. By establishing a clan in which mutual bonds of trust exist, the basis for reciprocity can be changed, and in that way organisations can deal better with an uncertain future. Future transactions can be agreed upon based on trust. This implies that not all possible future states need to be laid down in a specified contractual relationship. Because a party can trust the other to interpret the uncertain future in a manner that is acceptable to him (and act accordingly), contracts can remain incompletely specified. Therefore clans are the preferred governance mechanisms in a situation of high goal incongruence and high performance ambiguity.

[6] Macneil instead, argued that exchange can also take place on other bases than reciprocity.

[7] Referred to by Ouchi, 1980:132.

Although Ouchi deals with an internal organisation question rather than with the question of economic organisation across organisational boundaries, he does contribute to the discussion on trust by stressing the function of trust in exchange relationships. He describes the specific merits of trust governed relationships, being the ability to cope with an uncertain future and the decreased need for specified contracts, and unveils in this way part of the meaning and functioning of trust as seen from a TCE perspective.

What to learn from Ouchi 1980
– Reciprocity and equity form the basis for economic exchange
– Through the process of socialisation the basis for reciprocity can be changed
– Trust makes future exchange possible without the need for fully specified contracts
– Trust relationships are well suited to cope with uncertainty and diverging goals

Bradach & Eccles 1989

In 1989 Bradach & Eccles published their article "Price, Authority, and Trust: From ideal types to plural forms", in the Annual Review of Sociology, in which they focus on the conceptualisation of social factors in economic exchange. Their central argument is that price, authority, and trust are independent governance mechanisms that can be combined in a number of ways. Although they build their argument on the markets and hierarchies framework, they explicitly depart from its dualistic and mutually exclusive character. They plea for the coexistence of the governance mechanisms and illustrate their coexistence in practice. As an example of a combination of price (market) and authority (hierarchy), they discuss the multidivisional firm. In the multidivisional firm profit centres and transfer-pricing schemes are established, by which features of markets are introduced into hierarchies (1989:101). As an example of how price and authority can be combined in market transactions, Bradach & Eccles discuss the occurrence of R&D co-operation and Joint Ventures. In line with Stinchcombe's (1985)[8] observations they argue that authority mechanisms are especially introduced into markets under the following conditions:

– The absence of ex ante product specifications;
– uncertain design and production costs;
– difficulties with performance measurement (1989:102).

Because market mechanisms can not deal with these uncertainties, hierarchy is needed to cope with them. The authors view contracts as suitable authority mechanisms that may include inspection arrangements and agreements on who has the authority to modify contractual provisions.

In addition to authority mechanisms, Bradach & Eccles stress the importance of trust. The authors view trust as a mechanism that increases norms of obligation and co-operation. They

[8] Referred to in Bradach & Eccles 1989:102.

build on Macauley (1963) in stating that man is not only self-interested and opportunistic, but that in business also common honesty and decency are found (Macauley 1963). Furthermore, they build on Macneil's (1978) observation that business partners strive for harmonising roles and the preservation of the relationship. Because of mutual trust and norms of obligation, partners are stimulated to stick together because *"... obligations are ignored at the peril of damaging one's business reputation or personal friendship or both"* (Bradach & Eccles 1989:106). They describe 'goodwill' as another angle to trust which is comprised of *"sentiments of friendship and the sense of diffuse personal obligation which accrue between individuals engaged in recurring contractual economic exchange" (Dore 1983:460)*[9].

Lastly they describe political institutions and socialisation as forms of trust. They fall back on the work of Ouchi (1980) by advocating clan-like relations across organisational boundaries. The function of trust is, in their reasoning, similar to that of authority. The difference lies in the fact that authority renders formal mechanisms to guide future exchange and that trust enables a leap beyond the expectations that reason and experience alone would warrant[10].

In the paper, the authors are very optimistic about the function of trust in business relationships. They quote Arrow (1974) on trust being an important lubricant for the social system and also extremely efficient. The efficiency of trust results from the fact that people can rely on each other's word. They further adopt the argument of Granovetter (1985) that personal relationships prevent opportunistic behaviour and make contracts unnecessary. They even argue that contracts can be considered as a sign of distrust, a view which they adopt from Macauley (1963). Although they critically note the ways in which trust can be used and recognised (referring to 'tit for tat strategies' from game theory), they strongly plea for the inclusion of trust in the analysis of IORs because they think that game theory and TCE unjustly neglect the role of trust and the way in which shared expectations of the future are formed.

For this thesis, several elements from the work of Bradach & Eccles are of value. First, the emphasis on the contextuality of governance mechanisms is of value, because it gives clear predictions on what mechanism to expect in the technological setting in which the relationships take place that I describe in this thesis. Further, they contribute to the discussion by dividing trust into different elements, thereby unveiling more of the meaning of trust. Lastly, the authors signal some of the functions of trust, being the ability to cope with uncertainty, the positive effect on efficiency, opportunism and need for contracting.

[9] Dore (referred to in Bradach & Eccles 1989) studied the Japanese textiles industry. His study showed the importance of "goodwill" in Japanese trading relationships.

[10] Bradach & Eccles (1989) adopted this notion from Lewis & Weigert (1985), who characterise trust as a 'cognitive' leap.

What to learn from Bradach & Eccles 1989
– Authority mechanisms are introduced into markets under a) the absence of ex ante product specifications; b) uncertain design and production costs; c) difficulties with performance measurement
– Trust as a norm of obligation can keep parties together out of fear for their reputation
– Trust as a sentiment of friendship can keep parties together out of goodwill
– Authority renders formal mechanisms to guide future exchange whereas trust enables a leap beyond the expectations that reason and experience alone would warrant
– Trust increases IOR efficiency, reduces the risk of opportunism and makes contracts unnecessary

Anderson & Narus 1990

In their article "A model of distributor firm and manufacturer firm working partnerships" published in the Journal of Marketing, Anderson & Narus state that companies are involved in fewer, but increasingly significant, working partnerships that are essential for their mutual success (Anderson & Narus 1990:42). In their model, both the past and the future play an important role. They focus on ongoing, long-term relationships and on their development process. Central to their analysis are the concepts of dependence, influence, power, conflict and trust. The authors stress the interconnectedness of these concepts that are partly derived from TCE and partly from sociologically oriented research. Power and influence are considered a primary consequence of dependence. Dependence is defined as a subjective interpretation of a situation:

> "Relative dependence can be defined as a firm's perceived difference between its own and its partner firm's dependence on the working partnership"(Anderson & Narus 1990:43).

The firm with greater relative dependence has greater interest in sustaining the relationship and is hence more receptive to requests or demands from its partner firm. This partner will, as a result, experience more conflict than the firm in power[11]. Conflict represents the overall level of disagreement in the working partnership and is determined by the frequency, intensity, and duration of disagreements (1990:44).

Trust, in turn is discussed as a passive expectation of the other's behaviour that can lead to an active, trusting response whereby a company commits itself to a possible loss (1990:45). The authors relate trust to communication, cooperativeness and conflict. They assume that trust will lead to better communication, improved cooperation, and functional rather than destructive conflict. Although the authors stress the importance of dynamics in their conceptual framework, their model does not include interactive effects between the different variables. Instead, the model examined linear causality between them. Contrary to the conceptual predictions, cooperation and communication appeared to precede trust instead of the other way around. No correlation between trust and conflict was found. Although these findings are disappointing, they

[11] Gaski (1984) found the same relationship between dependence and perception of conflict.

can also be seen as an indication that the investigated concepts interrelate in a more complex way than assumed. The contributions of this thesis lies in the conceptual analysis of both classical transaction cost variables (e.g. relative dependence) and social factors such as trust, cooperativeness, communication and conflict. Also the disappointing result concerning the causality of concept contributes to the discussion, since this underscores the importance of a dynamic, interactive way of analysing the concepts.

What to learn from Anderson & Narus 1990
– The past and the future are important in understanding the complex processes of relationship development
– Dependence is a subjective interpretation of a situation and is the result of power and influence
– Dependent firms have the greater interest in sustaining the relationship and experience more conflict
– Dependence, influence, power, conflict and trust are interconnected concepts although not in a linear causal way
– Trust leads to functional rather than destructive conflict

Zaheer & Venkatraman 1995

In 1995 Zaheer & Venkatraman published their article "Relational governance as an interorganisational strategy: An empirical test of the role of trust in economic exchange" in the Academy of Management Journal. Theoretically their article resembles the article by Bradach & Eccles remarkably. They develop a model in which sociological factors are integrated into the classical transaction cost framework because they assume that discrete transactions (i.e. anonymous, characterised by limited communication as assumed by neo-classical theories) do not exist because every exchange includes some relational elements (1995:374). Like Bradach & Eccles they assume that trust and abstention from opportunism go hand in hand. They add that cooperative actors that trust each other will tend to govern their relationship more efficiently because safeguards to check opportunism become unnecessary[12]. They relate trust and uncertainty with the degree of vertical quasi-integration (i.e. the degree of market or hierarchical structuring in the transaction) and the degree of joint action (i.e. the process underlying the transaction, such as joint activities in planning and forecasting).

In the quantitative estimation of their model, they encounter the same problems as Anderson & Narus. Because of the limited dynamics in their model they find unclear relationships between the different variables. Contrary to expectations they find that trust is positively related to the degree of vertical quasi-integration. They explain this result by arguing that trust is measured at a given time and may have been absent before the parties established the level of integration as at the time of measurement. Further they argue that with higher levels of integration, over time, higher levels of trust may also develop. In short, they are not able to

[12] Bradach & Eccles went one step further stating that contracts become unnecessary and could even be understood as a sign of distrust.

capture the underlying, time dependent processes in their study. They do find, however, that the inclusion of trust in the traditional transaction cost framework increases the explained variance in their model significantly.

If the studies of Zaheer & Venkatraman and Anderson & Narus are confronted with the transaction costs framework, it becomes clear that the inclusion of trust contributes to the understanding of interorganisational relationships. It is difficult though to demonstrate its exact function because of the dynamic character of the relationships. This leaves us with the question whether trust decreases or increases the level of formalisation (i.e. contracts, formal arrangements, integration). In the studies discussed, trust appeared to increase rather than decrease the level of formalisation. Bradach & Eccles and Anderson & Narus explain their unexpected outcome by the limited dynamics that are included in their models. In chapter 6, when both trust and dynamics are included in a theoretical model, and this model has been applied to the description and analysis of IORs, an alternative explanation for these outcomes will be presented.

What to learn from Zaheer & Venkatraman 1995
– Every exchange includes relational elements
– Trust reduces opportunism, making safeguards unnecessary and IORs more efficient
– Dynamics are essential for the analysis of the complex relationships between social and economic factors in IORs

Nooteboom 1996

Nooteboom (1996) tries to solve the problem faced by both Anderson & Narus and Bradach & Eccles by introducing a dynamic power and control model of IORs based on TCE and social exchange theory. In his model trust and opportunism coexist. Trust is, as in the previously discussed articles, considered as decreasing opportunism, lessening the need for specification and monitoring of contracts, increasing flexibility, and decreasing the need for material incentives for cooperation (1996:989). The process character of trust is emphasised by arguing that trust is both a result and a condition for cooperation. To get a better understanding of trust, its content is explored in more detail. Nooteboom distinguishes between competence based trust which is the ability to perform according to agreement, and goodwill based trust that relates to the intentions to do so.

It is the latter that Nooteboom focuses on in studying interorganisational relationships. Competence based trust is seen as part of a company's value. Opportunism is also explored in more detail. Three elements are distinguished:

– Incentives for opportunism (depending on, for example, switching costs);
– opportunities for opportunism (the ability to behave opportunistically), and;
– the propensity towards opportunism (inverse of goodwill trust).

Incentives for opportunism can be influenced by *private ordering*, for example by changing switching costs or increasing a partner's captivity. Opportunities for opportunism can be confined by *legal ordering* and are considered absent in closed contracts. In the absence of formal

constraints, opportunities are considered maximal. The propensity towards opportunism can be regulated by investing in trust related concepts such as norms, values, ethics, customs, or bonds of friendship. Like Bradach & Eccles, Nooteboom argues that contracts can be interpreted as a sign of distrust and can be counterproductive in building a trusting relationship.

In the resulting model, relative value, captivity, perceived dependence, and opportunism are the central parameters. The model sketches the interdependencies between two actors and establishes their interaction dynamic by including a control loop that enables partners to change the parameters (private, legal, social ordering) and thus change the relationship. Although Nooteboom's model is not tested in his article, some examples are outlined to illustrate its applicability.

Nooteboom's article contributes greatly to the discussion on the inclusion of trust into transaction costs economics. It gives a more tangible meaning to trust by distinguishing between competence and goodwill trust. Furthermore, it is the first article that explicitly builds on the inclusion of both trust and dynamics into the TCE framework. An important contribution also lies in his description of the function of the different ordering mechanisms (legal, private and social ordering) and their relationship to the different sources of opportunism. These insights will form the basis on which I will continue, making use of the concepts of goodwill and competence trust and on the function of legal, private and social governance.

What to learn from Nooteboom 1996
– No linear causal relationships between variables should be sought, but circular relationships with trust being both the cause and the result of cooperation
– Trust and opportunism should be further specified to understand their exact function and relatedness
– Trust can be divided into competence and goodwill based trust
– Opportunism consists of the incentive for, opportunity for, and propensity towards opportunism
– Private, legal and social ordering can change and thereby govern the relationship and decrease the risks associated with opportunism

2.8 Conclusion: Are TCE and trust compatible?

This chapter started with the observation that transaction costs economics has some serious drawbacks when used for the analysis of interorganisational relationships. Instead of rejecting TCE for that reason, I proposed to complement transaction costs economics with trust and dynamics, thereby eliminating some of the grounds for criticism. To get a clearer picture of the classical framework I first discussed transaction costs economics on the basis of the work of Williamson (1975, 1985). From the TCE framework, the most important concepts will be adopted in the further development of the theoretical framework in this thesis. These concepts are bounded rationality, uncertainty/complexity, asset specificity, opportunism, legal and private ordering.

To further develop the TCE framework, I discussed that, besides the safeguards distinguished by transaction costs economics (legal and private ordering), trust can also be considered as a governance mechanism. The content and function of trust though, especially in relation to transaction costs economics and its traditional governance mechanisms, is not well developed.

Therefore I selected papers that shed some light on the complex relationship between trust, contract and private forms of governance. The lessons of these articles were confronted with traditional transaction costs economics and were compared to each other. In this way, the contributions of each article were extracted. The most important contributions (in the light of this thesis) are summarised in brief below. These contributions have been translated into propositions that will guide the further development of this thesis in which it will be examined whether the findings can be replicated or improved if a dynamic model is introduced and examined in a high technology setting.

Macneil (1980) taught us that although discrete transactions do not exist, because all transactions include relational elements and are embedded in society, people still reason according to the 'laws' of discrete exchange. Contracts reflect this same interconnectedness between rational, economic thinking and relational reasoning. Furthermore, Macneil pointed out the importance of power and dependence because they determine the room for negotiations in contractual relationships. From Macneil one element is taken for the further development of this thesis; the interconnectedness between economic and relational reasoning. This double function will be reflected in the contracts between partners. This leads to the proposition:

> *Proposition 1: Contracts reflect both relational and economic aspects of the relationship.*

Ouchi (1980) argued, that reciprocity should be more central to the analysis of exchange relationships than it is in transaction costs economics that focus on efficiency. Reciprocity is the basis on which exchange takes place and the basis for reciprocity can be changed through the process of socialisation. Through socialisation, trust is established that makes future exchange, and exchange under uncertainty, possible without the need for fully specified contracts. In this thesis, Ouchi's line of reasoning will be adopted but posed as a proposition instead of a conclusion: This proposition is:

> *Proposition 2: Trust is a suitable alternative to extensive contracts under conditions of uncertainty/complexity.*

Bradach & Eccles (1989) highlighted the phenomenon that authority mechanisms are introduced into markets if ex ante product specifications are absent, design and production costs are uncertain, and difficulties exist with performance measurement. This is important as the IORs that will be described later in this thesis, take place in a high technology setting characterised by absence of product specifications and uncertainty. Furthermore, they shed light on the content of trust, dividing trust into a norm of obligation and a sentiment of friendship (goodwill). Trust is argued to be of special importance in situations where formal authority mechanisms cannot sufficiently guide future exchange. In such situation trust enables parties to make a leap beyond the expectations that reason and experience alone would warrant. Lastly, the function of trust is described as increasing the efficiency of relationships, reducing the risk of opportunism and making contracts unnecessary. From the article of Bradach & Eccles two propositions are derived:

Proposition 3a: Trust increases relationship efficiency, reduces the risk of opportunism and makes contracts superfluous.

Anderson & Narus (1990) add to the discussion that the past, the future and dynamics are essential to understand the complex processes of relationship development. They point to the subjectivity of dependence and to the fact that dependent firms experience more conflict because they have less bargaining power. They furthermore shed light on the interrelatedness between dependence, influence, power, conflict and trust, thereby contributing an insight into the relationship between transaction costs concepts and social factors. They argue that trust leads to functional rather than destructive conflict. Their observations lead to the following propositions:

Proposition 4: Dependent companies have less bargaining power and experience more conflict.

Proposition 3b: Trust reduces the level of conflict and enables constructive conflict resolution.

Zaheer & Venkatraman (1995), like Macneil, point to the fact that every exchange includes relational elements. They further argue that trust reduces opportunism, making safeguards unnecessary and IORs more efficient. Like Anderson & Narus, they do not succeed in empirically showing the linear causality between the different factors. Therefore, both sets of authors plea for the inclusion of dynamics in the analysis of the complex relationships between social and economic factors in IORs. This leads to the following proposition:

Proposition 5: The relationship between social and economic factors in IOR development can only be uncovered by introducing non-linear dynamics into the analysis of IORs.

As the most recent paper in the discussion, Nooteboom (1996) was the first to include both dynamics and trust into the analysis of IORs. He emphasises, though, that linear causal relationships between variables should not be sought, but rather circular relationships with trust being both the cause and the result of cooperation. He reveals part of the content of trust by distinguishing between goodwill and competence trust, and sheds light on the content of opportunism. Like Bradach & Eccles he argues that contracts are unnecessary if trust is present and that they can even be interpreted as a sign of distrust. By focusing on private, legal and social ordering as mechanisms to govern a relationship he provides a solid basis on which to build in the analysis of IORs in this thesis. The proposition that is derived from his work is:

Proposition 6: Social, legal and private ordering can be complementary in influencing and controlling IOR development and preventing opportunism

In the next chapter I will further explore the content and function of trust in IORs, thereby answering propositions 3 a & b, and 4. Furthermore, a dynamic process will be introduced thereby providing the basis for the dynamic analysis of IOR development, combining both TCE and social factors.

3

Trust and dynamics in interorganisational relationships

"… contract between totally isolated, utility maximizing individuals is not contract, but war; contract without language is impossible; and contract without social structure and stability is - quite literally - rationally unthinkable, just as man outside society is rationally unthinkable" (Macneil 1980: 1).

3.1 Introduction

In Chapter 2, trust was examined as complementing transaction costs economics. The exact content of trust was not yet clear[13]. Its function was described by the different authors as reducing opportunism and destructive conflict (Anderson & Narus 1990, Zaheer & Venkatraman 1995), reducing the need for safeguards (Bradach & Eccles 1989), changing the basis for reciprocity (Ouchi, 1980), creating norms of obligation (Bradach & Eccles 1989), and increasing the efficiency of the relationship (Bradach & Eccles 1989, Zaheer & Venkatraman 1995). Considering the positive effects of trust, the conclusion is that trust is good for intra and interorganisational relationships. This positive view on trust is also present in other literature. Trust is referred to as being the lubricant in many sorts of relationships (e.g. Larson 1992, Ring & Van de Ven 1994, Gulati 1995) and in Fukuyama's book 'Trust - The Social Virtues and the Creation of Prosperity' trust (1995) is even considered a crucial variable in explaining the development of modern economic societies. When critically reviewed though, one wonders what this magic concept of trust is. Porter, Lawler & Hackman describe their curiosity regarding trust as follows:

[13] This chapter is partly based on the articles 'Entrepreneurial activity through interorganisational relationships: A longitudinal approach' by Klein Woolthuis (1996) and 'Sleeping with the enemy: About trust and dependence in interorganisational relationships in a technological setting' by Klein Woolthuis (1999).

> 'Trust... tends to be somewhat like a combination of the weather and motherhood; it is widely talked about, and it is widely assumed to be good for organisations. When it comes to specifying just what it means in an organisational context, however, vagueness creeps in (Porter et al.1975:497)'.

Considering the importance of trust in IOR development, it is important to unravel its content and replace its vagueness with a clear definition. In this chapter, trust will first be distinguished from its related concepts. The distinctions that are made are based on a literature study. From the discussion on what trust is and what it is not, common elements are derived in order to come to a sound definition of trust. After the content of trust has been defined, the bases on which people trust are examined. The final goal of the chapter is to emphasise the dynamic function of trust in IOR development. Therefore, first the dynamics of trust are described, then a dynamic model of IOR development is introduced and finally a dynamic model is built in which trust and IOR dynamics can be described and analysed.

3.2 Distinguishing trust from its related concepts

Many authors have tried to grasp the content and function of trust. In this paragraph, their contributions will be reviewed. From their discussion on what trust is and what it is not, common elements will be derived that will lead to a clear definition of trust. This to prevent confusion between trust and seemingly similar concepts such as confidence, risk taking, and predictability. Mayer et al. distinguish trust from risk since trust is, in their argument, the *willingness* to take risk. Trust and the willingness to take risk mutually influence each other. Trust enlarges the willingness to take risk (i.e. to commit to a relationship) (1995:711). This commitment increases the level of trust by the other party to the relationship and in this way a positive feedback system is created (Gulati 1995). The distinguishing factor for the definition of trust is therefore the *willingness* to become vulnerable.

Luhmann distinguishes trust from confidence, because confidence refers to a situation in which you do not consider, or do not have, alternatives. Trust rather refers to the preference of one action over another in spite of the possibility of being disappointed (1988:102). In short, confidence is something evident whereas in a situation of trust, risk is recognised and a *conscious choice* is being made to take that risk because of the belief that the other party can be trusted (c.f. McAllister 1995). The distinguishing characteristic from this discussion is the *conscious choice* to become vulnerable.

Deutsch (1973) distinguishes trust from predictability. In his view trust must go beyond predictability since untrustworthy behaviour can also be completely predictable. He states that *"… trust is based on the expectation that one will find what is expected rather than what is feared"*. Bradach & Eccles add that trust is *"… a type of expectation that alleviates the fear that one's exchange partner will act opportunistically"* (1989:104). Gambetta describes trust as a *"… particular level of the subjective probability with which an agent assesses that another agent … will perform a particular action both before he can monitor such action ... and in a context in which it affects his own action"* (1988:217). The distinguishing factors from this discussion are the *positive association* that trust implicitly carries and the *subjectivity* of the choice

to trust. The positive association is important because one would not consider a completely predictable situation as one of trust if the prediction is not a positive one. The *subjectivity* is an important distinguishing characteristic because trust is based on the perception of a certain situation in which one does not know for sure what will happen.

One factor that reappears in the previous discussions, is the importance of vulnerability. Trust is the willingness and conscious choice to become vulnerable. Trust alleviates the fear of this vulnerability, according to Gambetta even when monitoring is not possible (1988:217). McAllister describes this vulnerability as *"the extent to which a person is confident in, and willing to act on basis of, the words, actions, and decisions of another"* (1995:25). *Vulnerability* is therefore also considered a crucial characteristic in the definition of trust.

A final distinguishing factor is that trust is *domain specific* (Mayer et al. 1995:717). In general, trust is directed to some specific domain in which a partner is considered to be capable of exerting influence or performing a certain task.

3.3 Defining trust

There are different elements that reoccur in the descriptions above and which are therefore considered to be important in the definition of trust. The following characteristics of trust are distinguished:

- Willingness to take risk / to be vulnerable;
- conscious choice;
- subjectivity;
- positive association;
- domain specific.

When these characteristics are combined we arrive at the following description of trust. Trust involves a conscious choice to be vulnerable. This choice is based on the subjective probability that another's behaviour will not be detrimental to one's own interests, irrespective of the possibility to monitor or control this behaviour. Trust in another party is domain specific and carries a positive association. The definitions by Zand (1972) and Mayer et al. (1995) best match with these characteristics. The definition of Zand is as follows:

> 'Trusting behaviour is consisting of actions that (a) increase one's vulnerability, (b) to another whose behaviour is not under one's control, (c) in a situation in which the penalty (disutility) one suffers if the other abuses that vulnerability is greater than the benefit (utility) one gains if the other does not abuse that vulnerability' (Zand 1972:230).

The metaphor used by Zand to clarify this definition is of a couple that get a babysitter to look after their little child while going to the cinema. The benefit of seeing the film cannot in any sense be compared with the possible catastrophe if the babysitter turns out to be untrustworthy. In this definition, vulnerability is of crucial importance. In the IOR context of this thesis, the penalty need not be greater than the benefit since the penalty for abusing the vulnerability could

be the loss of a customer, disappointing partner performance, or insufficient return on investment because a partner tries to reap disproportional benefits. Sometimes the penalty will be greater, sometimes it will be less. The size of the penalty will largely determine the effort one will take to prevent such behaviour as described by Nooteboom (1996). Because great vulnerability is not considered crucial for trust, I prefer to use the definition of Mayer et al.:

> 'Trust is the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party' (1995:712).

The definitions of both Zand and Mayer et al. make it very clear that trust is not just a *"… global feeling of warmth or affection, but the conscious regulation of one's dependence on another that will vary with the task, the situation, and the other person"* (Zand 1972). It is this notion of dependence that will be emphasised, alongside trust, to balance the 'romantic' view on trust, with its harder counterparts such as dependence and power. Seemingly trusting behaviour, in a sense of becoming vulnerable to another party, can for example also be evoked in a situation of power or dependence. This is plausible between parties with a skewed power balance because of, for example, knowledge asymmetry. In a situation of dependence there is no conscious choice of whether to act on trust. One simply has to take a chance that the other will not abuse one's vulnerability because one has no alternative. In such a situation it is not appropriate to speak about trust. Rather the term confidence should be used as defined by Luhmann (1988). Before combining insights on trust with the traditional transaction costs considerations (dependence, information asymmetry) I will further disentangle the concept of trust.

3.4 The bases for and objects of trust

Now the concept of trust, and its basic characteristics, have been defined, it is still not clear on what basis we trust or distrust our business partners. How does trust come into being? In this thesis it is assumed that partners have three bases on which they trust. First, people have a certain basic attitude towards other people that contains a general willingness to trust. Second, people can have knowledge about a partner on the basis on which they trust. Third, people can have or develop feelings about a partner that makes them trust. The bases of trust are:

1. Trust propensity;
2. cognition based trust;
3. affect based trust.

These three bases of trust conform to the definition given (Mayer et al. 1995) that included a conscious choice to be vulnerable. Also a fourth form of trust is often distinguished though that does not involve a conscious choice. This is the concept of habituation (Nooteboom 1996). During a relationship partners can develop shared norms, values and routines that come to guide the relationship in a natural way. The routines and ways of working become self-evident and predictable for the partners. Based on earlier experience they have faith that their partner will

behave like he did before. Habituation differs from the other bases of trust in that it does not necessarily involves a conscious choice. In time, a relationship can become so self-evident that partners no longer consider alternatives, introducing rigidity and blind faith into the relationship. Nevertheless, habituation does come close to the concept of trust as referred to in this thesis, since it strongly influences the expectations that a partner will perform a certain task irrespective of the ability to monitor. Therefore habituation is also discussed although it is not recognised as a form or basis of trust.

Trust propensity

In this model I assume that trust always has an initial value which reflects a person's general willingness to trust (Mayer et al. 1995). One person will be more inclined to trust without prior knowledge of a party than another. In general two basic positions can be distinguished: those people that trust and wait until it is harmed before they distrust, and those people that distrust until people have proven to be trustworthy.

People develop their willingness to trust through their rearing and experience. Strong influences in this development will be the experiences people have in their personal and professional lives, which in turn will be strongly influenced by the culture of the country, region, industry or societal class etc. in which they operate. The initial level of trust can be considered as given (exogenous) when people enter into an interfirm relationship, because it is a predetermined and relatively stable attitude that is not likely to be changed by individual experiences. Mayer et al. (1995) named this form of trust 'propensity', which they say is the initial willingness to trust others.

Cognition based trust

A second basis for trust is cognition or knowledge. Cognition or knowledge based trust has been identified by McAllister (1995), Zucker (1986), Gulati (1995) and Shapiro (1987). Larson (1992) refers to the same concept with the term economic based trust. Cognition based trust is based on knowledge of past behaviour and performance of a partner. This knowledge of past behaviour gives partners a basis on which to predict future behaviour. We could consider someone trustworthy because their product quality has always been good and delivery times are met. This is the type of trust that is most commonly referred to by economists because of its relevance to economic transactions and its rationality.

Cognition based trust can also exist without having previous experience of a partner since this knowledge is also embedded in markets and institutions. Indicators for trustworthy behaviour could be the firm's reputation, the possession of an ISO certificate, or a company's track record. Zucker (1986) refers to this as institutional based trust. Cognition based trust thus clearly focuses on the rational, knowledge based side of trust between business partners. Since there are always limits to knowledge, because of people's inability to retrieve or process all relevant information, parties also have to rely on their feelings or intuition in deciding whom to trust. This stresses the importance of affect based trust.

Affect based trust

McAllister (1995:29) describes that for the development of affect based trust the following behaviour is required:

> "… behaviour recognised as personally chosen rather than role prescribed, serving to meet legitimate needs, and demonstrating interpersonal care and concern rather than enlightened self-interest may be critical for the development of affect based trust".

Organ (1988) referred to this behaviour as organisational citizen behaviour, which he described as *"… behaviour intended to provide help and assistance that is outside an individual's work role, not directly rewarded, and conducive to effective organisational functioning"*. Altruism is said to be a specific form of this citizen behaviour. As such, affect based trust is strictly personal and based on feelings rather than rational considerations. It might thus be possible that one rationally trusts another, while emotionally distrusting that person. Reasons for emotional distrust can be the way one communicates or the look in someone eyes. Contributing to the development of affection is the extent of similarity between partners. The more similar partners are (e.g. cultural, educational background, gender, age), the more likely it is that the people will intuitively understand and trust each other (Hellriegel et al. 1992).

The objects of trust: Competence and goodwill trust

The bases for trust not only refer to a starting position or a moment when parties are confronted with a choice whether to trust a partner or not. It also relates to the ongoing process of relationship and trust development. As relationships develop over time, and parties are engaged in recurrent interactions, parties acquire more knowledge of the other's competencies and capabilities (cognition based trust). This provides the basis on which parties develop *competence trust*: they trust in their partner's competence and in their ability to execute the project as agreed upon. Parties can also further develop bonds or shared norms and values (affect based trust). These feelings form the base of *goodwill trust*: because the bonds between partners have led to the development of a more than strictly economic relationship, they will treat the partner's interest with care and concern and they trust their partner to do the same. In short, changes occur in the level of affect and cognition based trust, which in turns form the bases on which parties develop competence or goodwill trust (Nooteboom 1996).

3.5 Habituation and the risk of inertia

Furthermore, routines may develop and working procedures may be adapted, referred to as habituation (Nooteboom 1996). In time, partners get used to each other, align their methods and procedures and learn how to work together and understand each other. Habituation is different from trust because it does not necessarily involve a conscious awareness of the reliance they have in each other. Partners may be used to working together without regularly evaluating the relationship, or considering alternatives. If the relationship is based on such routines, its

management can be very efficient but at the same time the risk exists that the relationship develops into one that is not the most effective. If partners no longer question each other's qualities and way of working, and if they do not search for alternative ways or partners, the partners may not be stimulated to improve and to innovate to keep ahead of potential competitors. This can lead to inertia and hence to a reluctance to change to more efficient forms of governance or to innovate (Pouder & St.John 1996).

3.6 Trust as a process

After having discussed the different bases of trust, I now want to illuminate the process characteristics of trust, since the value of trust lies in its influence on the development of interorganisational relationships.

In 1972 Zand published his article "Trust and Managerial Problem Solving" in which he examined the influence of trust on the problem solving capacity of groups. He partly based his study on the earlier works of Gibb (1961, 1964) who had described the relationship between the absence of trust and defensive behaviour. Zand used Gibb's conclusions as an indication that trust would be important in the functioning of teams. Following Gibb's footsteps Zand (1972:229) wrote:

> 'There is an increasing rich evidence that trust is a salient factor in determining the effectiveness of many relationships... Trust facilitates interpersonal acceptance and openness of expression, whereas mistrust evokes interpersonal rejection and arouses defensive behaviour'.

When parties encounter low trust behaviour they will hesitate to reveal information, reject influence, and evade control. This negative feedback system will reinforce the low level of trust, and unless there are changes in behaviour, the relationship will stabilise at a low level of trust. This will diminish the effectiveness of joint problem solving efforts.

> 'Persons who trust each other however, will provide relevant, comprehensive, accurate, and timely information, and thereby contribute realistic data for problem solving efforts' (Zand 1972:231).

People who trust each other will expose themselves more easily, are more receptive to other's ideas, accept more interdependence, and have less need to impose control on others. In this way also the likelihood of misinterpretation of each other's behaviour decreases. As a result, problems are more likely to be identified, openly examined, and solutions are more likely to be appropriate and creative. This enables an open and fertile environment for constructive cooperation.

Zand studied these relationships between members of the same organisation. The focus in this thesis, is the role of trust in the relationships between organisations. The question is whether there are important differences in the function of trust between members of the same organisation and between members of different organisations. Gulati (1995) put the question: *"Can there be trust between two organisations that are simply agglomerations of individuals. Intuitively, trust is an*

interpersonal phenomenon". But, as organisations comprise of people, and interfirm co-operation is between the representatives of the companies involved, IORs *are* an interpersonal phenomenon. The relevant difference between intra and interorganisational trust is that, in the latter, different company objectives are involved that can be contradictory and can overrule personal sentiments of friendship or loyalty (Ring & Van de Ven 1994). A company can be trusted based on its reputation and on earlier personal experience in working together. Furthermore, just as trust can develop in the character of a person, trust in a company may develop based on the company's business culture or the way of working and approaching exchange relationships. Although differences thus exist, the development of trust, and its effect on the relationship between individuals or organisations, will be roughly the same. The process as described by Zand is illustrated in Figure 3.1.

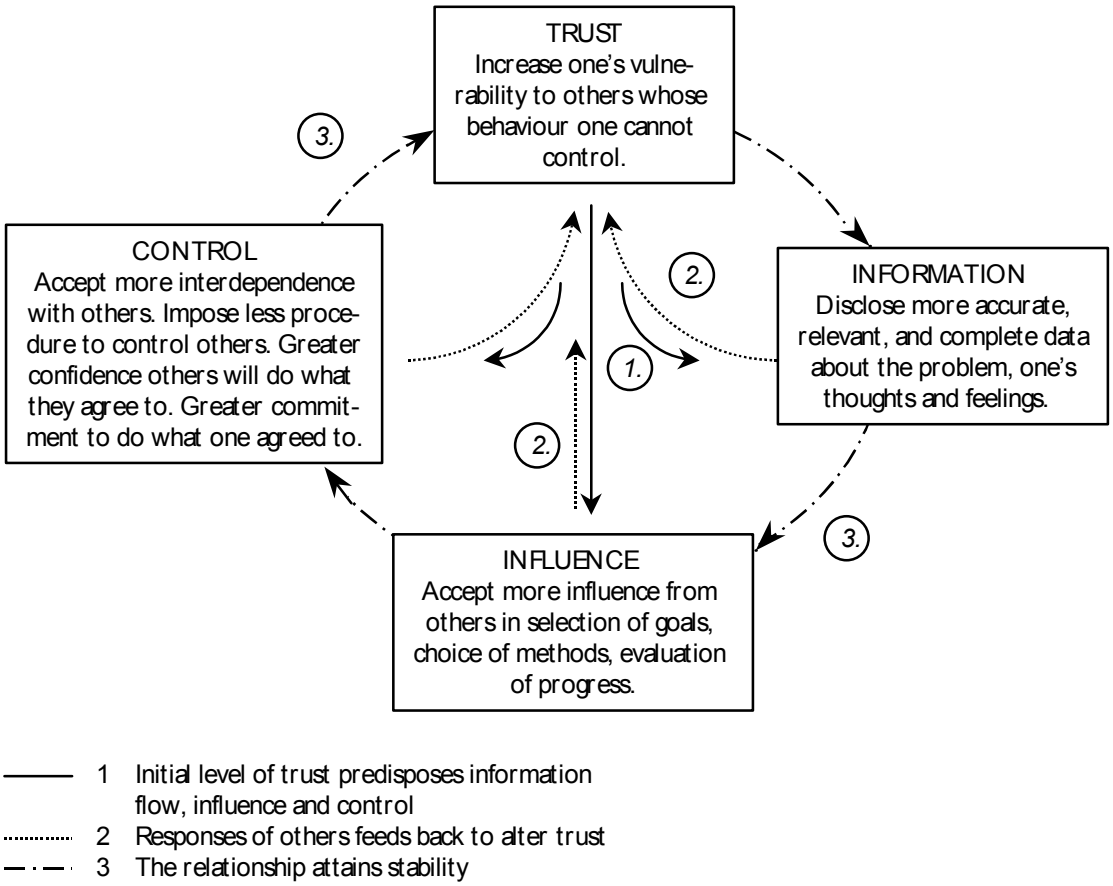


Figure 3.1 The function of trust (source: Zand 1972).

3.7 Interorganisational relationships as a process

As emphasised in chapter two, trust is an important factor in IOR development and a dynamic approach is important to understand its function in relationship development. In the previous section I discussed the process characteristics of trust. From this discussion it became clear that trust can fulfil an important function in the relationship development as it stimulates open communication, problem solving and reduces defensive behaviour. To be able to apply the

process perspective of trust to IORs, a process approach to interfirm relationships is also needed. In this section I will develop a process model of IORs. Process approaches to IORs are rare in current literature. Most studies are of a static and/or comparative nature. To illuminate the process characteristics of IOR development, I will build on the work of Larson (1991, 1992) and Ring & Van de Ven (1994).

Larson 1992

Larson (1992) developed a process model of network formation that highlighted the importance of trust, reciprocity and mutual interdependence. She criticises Williamson for his narrow focus on efficiency and transaction costs. Instead she builds on the work of Johannisson (1987), Powell (1990, 1994), Håkansson (1987), Contractor & Lorange (1988) and others that points out the importance of reciprocity, personal relationships, reputation and trust. In her argument, these are the factors that explain the length and stability of exchange structures. The aim of her work is to examine the extent to which social control (i.e. trust), as opposed to contracts and formal agreements, governs transactions (1992:77). She presents a model that describes the development of IORs in three phases.

The first phase is one where preconditions for exchange are created. In this phase personal reputations, prior exchange relationships and firms' reputations play an important role. Knowledge of the exchange partner reduces uncertainty, creates expectations and obligations, and enables early cooperation.

In the second phase, the conditions on which to build the relationship are formed. Mutual economic advantage leads firms to start their cooperation with a trial period in which frequently one firm is the initiator. The conditions to build a relationship include the establishment of rules and procedures, the setting of clear expectations and the development of trust. In the third phase, in which the cooperation is operational, integration and control are achieved and a network dyad is formed. In this phase the operations of partners are integrated and the exchange relationship is governed by social control.

The descriptive linear model will, in the next section, be adapted and combined with the circular model developed by Ring & Van de Ven (1994). Only elements from Larson's model are adopted because, in her complete model, two major drawbacks are identified. First the fact that she places contracts and formal agreements in opposition to social control. Second that she claims the absolute dominance of social control mechanisms. The fact that she sees contract and formal control as opposite to social control, contradicts the earlier discussion, based on Macneil (1980) and others, that contracts and formal agreements are always social as well. By focusing on the contradictory characteristics of the control mechanisms, one automatically finds a contradiction because one does not examine the complementary nature of the governance mechanisms.

Moreover, the conclusion on the dominance of social control mechanisms is highly predictable considering her choice of case studies. Larson (1992) bases her model on the study of seven interfirm alliances of four high growth firms. The alliances are all stable and successful and had existed for at least seven years. The choice of these successful relationships implies a strong

bias in the results. In these long lasting successful relationships, trust and habituation become increasingly important whereas contracts and formal agreements receive less attention. Like the actors in the IORs, Larson seems to forget that these relationships would however not exist without clear, economic interdependencies. Furthermore, the relationships will all be formalised in contracts, but since the relationships did not go through major crises, the contracts have probably never left the drawer after being signed in an early phase of the cooperation. The question is how Larson's conclusions would hold when a crisis broke out, or when a relationship was terminated. Therefore, only the descriptive process model of Larson will be adapted without adhering to her theoretical discussion opposing one governance mechanism with the other. Instead, my research focuses on the complementary nature of the control mechanisms as presented in chapter 2.

Ring & Van de Ven 1994

Ring & Van de Ven's research focuses on how IORs emerge, grow and dissolve over time. Unlike Larson, they also focus on disputes, their settlement, or the termination of the relationship. They distinguish four key concepts in the development process of IORs. The first is uncertainty regarding the future states of nature (environmental uncertainty) and uncertainty whether the parties can rely on trust[14]. Trust must exist both in the predictability of the partner's performance and his goodwill.

The second factor is the assessment of the relationship based on efficiency and equity. Efficiency refers to the most expeditious and least costly governance structure for undertaking a transaction. Equity refers to fair dealing for which reciprocity is sufficient as long as parties receive benefits proportional to their investment.

The third important factor in the development of IORs is the resolution of disputes. How disputes will be resolved depends on dependence on one hand, and social factors on the other. The greater the transaction-specific investments made under uncertainty, the more the parties will undertake to preserve the relationship. Social-psychological processes will create a separate set of pressures to preserve the relationship.

The fourth factor Ring & Van de Ven distinguish concerns the importance of role relationships. It refers to the interconnectedness in the development of IORs at the macro-level and the influence of the individual on this development. They assume that role relationships and interpersonal relationships will not be identical because individuals may need to act differently as role-agents for their organisations (1995:95-96). Based on these factors, Ring & Van de Ven develop their process model. From their process perspective

> "… IORs are socially contrived mechanisms for collective action, which are continually shaped and restructured by actions and symbolic interpretations of the parties involved" (1994:96).

[14] This conforms to traditional transaction costs economics.

Their model describes the development and evolution of cooperative IORs through repetitive stages of negotiation, commitment and execution. The stages are assessed in terms of efficiency and equity. The stages may overlap or be almost simultaneous for simple transactions. In general, the duration of the stages will vary according to (1) the uncertainty involved, (2) the reliance on trust and (3) the role relationships of the parties.

The phases that Ring & Van de Ven distinguish contain formal and informal aspects. During the negotiation stage, the focus is on the formal bargaining process about expectations and motivations. Underlying this process though, are social-psychological processes of sense-making and getting to know and understand each other. In the commitment stage an agreement is reached on the obligations and rules for future action. The terms and governance structure of the relationship are either codified in a formal relational contract or informally understood in a psychological contract between the parties. Finally, in the execution stage, the commitments and rules of action are put into action. Initially, role behaviour dominates interaction when executing commitments. Through a series of role-interactions though, parties may become familiar with each other as individuals and interpersonal (as opposed to inter-role) trust may be developed.

In long term relationships, misunderstandings, conflicts, and changing expectations and interests among parties are inevitable. These changes will make parties rethink and renegotiate the relationship to reach supplementary agreements for the contested issues. The terms and understandings contained in the relational contract remain the same to guarantee preservation of the ongoing relationship.

During all phases, continuous assessment takes place based on equity and efficiency. Efficiency refers to the most expeditious and least costly governance structure for undertaking a transaction, given production costs constraints. Equity can best be described as fair dealing. This is a not equivalence in the quid pro quo sense, reciprocity is sufficient as long as the benefits a party receives are proportional to their investments. Ring and Van de Ven assume that parties are motivated to seek both equity and efficiency to establish and keep a reputation for fair dealing that will enable them to continue to exchange transaction specific investments under conditions of high uncertainty.

3.8 A process model of IOR development

From the models of Larson and Ring & Van de Ven, different stages can be derived. In Larson's model, the past played a prominent role in emphasising prior to exchange relationships, already developed personal and company trust, and the importance of reputation. In emphasising the past, Larson gives strong leads as to why a partner is chosen and why partners are willing to cooperate and be vulnerable to one another. Ring & Van de Ven place a stronger emphasis on the later stages where partner have been chosen and negotiations take place on the terms of the relationship. As such, the models are complementary, giving a rich and complete image of how IORs evolve, grow and dissolve over time. In the composite model, past and future play an important role, rendering a full potential to analyse the dynamic development of IORs over time. Furthermore, the model gives a well-balanced view on the economic, as well as the social, factors

in economic exchange. In the model, social and legal governance mechanisms are considered complementary rather than contradictory.

In the different stages trust plays an important role. Prior experience plays an important role in determining which partner to trust and whom to cooperate with. Trust based on prior knowledge can be both affect based and cognition based. If knowledge is not available, reputations will play an important role and will, with the propensity to trust, determine the willingness to start negotiations with a relative 'stranger'.

In the negotiation phase, parties will gain knowledge of the other's capabilities and expectations. They can develop cognition based trust, based on what they learn about the partner's way of working and professional capabilities. Affect based trust can be developed when partners get to know and understand each other during recurrent negotiations and develop interpersonal alongside role relationships.

Close relationships will only be established if a certain level of trust between organisations exists. Commitment is hard to achieve if partners do not trust each other. Without trust the willingness to become vulnerable by committing to a deal will be absent. Trust makes dependence and vulnerability more acceptable and commitments thus easier to obtain.

In the execution phase, the developed level of trust will be tested because here operational cooperation takes place. If trust is present or growing, parties are likely to develop open communication. Partners can air their interests and intentions, which enables the resolution of conflict in a friendly manner. This will also stimulate creativity because one will be motivated to share his/her ideas in order to get helpful feedback. One will be less afraid that others will not take ideas seriously or that they will abuse information for their own interests. Open communication and creativity enlarge the problem solving capacity of the IOR and might thus well lead to better outcomes for everyone. The phases are illustrated in Figure 3.2.

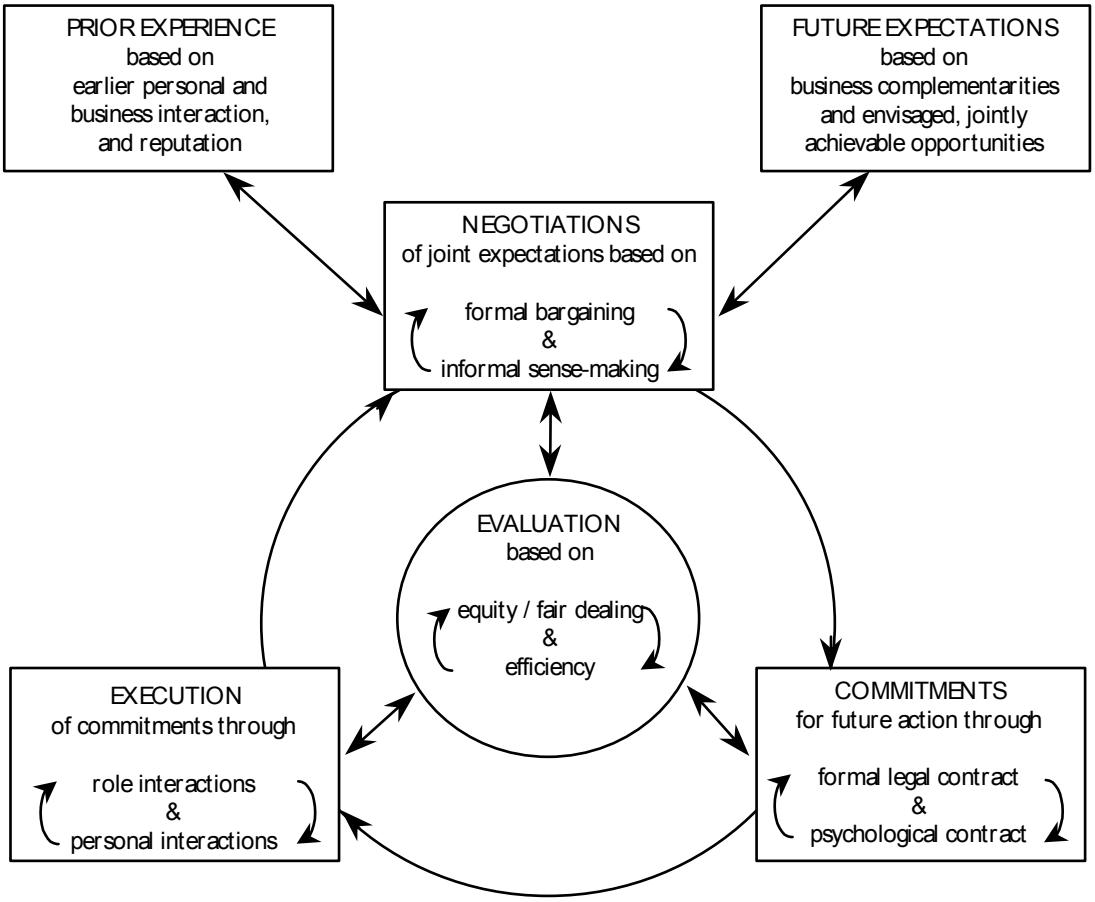


Figure 3.2 A process model of IOR development.

A phase that is not explicitly shown in the model, is the possible dissolution of the relationship or renegotiations to change the relationship. This point also receives relatively little attention in literature. No single relationship lasts forever though. There are several reasons for relationship termination. Conflicts may harm the relationship to such extent that relationship continuation becomes undesirable. Interests might change over time, thereby reducing the need for cooperation. The need for cooperation may also be reduced if external developments (e.g. new technological developments, introduction of competitive product or technology) make project execution, and therefore cooperation, unnecessary. The most common reason for relationship termination though, will undoubtedly be the completion of the joint project. If the active, operational relationship between partners is ended because the joint project has been completed, this does not imply that the relationship is broken. Partners have built up a joint exchange history and if new projects are to be started, they will prefer to cooperate with the partners with whom they have built such a history. Relationships can thus passively continue although there is no operational cooperation on a concrete project.

Besides the distinction between the relationship and the project execution, also a distinction should be made in the way partners deal with circumstances that threaten relationship continuation (across the different projects). If conflicts occur, interests change, or external developments threaten to reduce joint opportunities, partners have two ways to respond to such a situation: one can walk out (exit) or try to improve or save the relationship (voice) (Hirschman

1970, cited in Nooteboom 1999). The 'voice' option does not always mean that the project is continued. If there are no economic incentives or business opportunities left to pursue, continuation of the project is useless. It does imply though that partners try to solve problems in such a way that partners are still willing to cooperate with each other, either on a current project or on a future one. In this way the relationship is maintained although the project may be ended. The voice option implies, for example, renegotiating the contract, joint problem solving, and searching for new business opportunities. To successfully use the voice option, trust is a necessary ingredient to increase openness, loyalty and the willingness to solve the problem together. The exit option does not imply these aspects but rather refers to low trust situations and relationship termination by court resolution (Nooteboom 1999:76).

3.9 Conclusion: The dynamic relation between trust, contract and dependence

In chapters 2 and 3, different aspects of social, private and legal ordering were addressed. Most attention was paid though to specific aspects of the ordering mechanisms, i.e. trust, dependence and contract. In the remainder of this thesis trust, dependence and contract will be focussed on in explaining their relationship to IOR development and success. First, the dynamic relationship between the different ordering mechanisms will be illuminated based on the insights from chapters 2 and 3. Based on these insights, propositions are formulated that will guide the qualitative research in chapters 4, 5 and 6.

Social and legal ordering: Contacts or contracts?

The discussion on trust in this chapter, made it clear that trust can be divided into different forms of trust. The bases for the different forms of trust were trust propensity, affect and cognition trust. The objects of trust (the trust in one's partner) were defined as goodwill and competence. Initial hints were given on their specific function in IOR development. These insights lead to the following proposition.

> *Proposition 7: Trust can be distinguished by trust propensity, affect and cognition based trust. Affect and cognition based trust form the bases for goodwill and competence trust.*

It was also argued that trust has a broader function than described in the papers reviewed in chapter 2. Trust does not only decrease opportunism, thereby making contracts unnecessary, it also contributes to the openness of the relationship, to the willingness to be vulnerable and to the ability to solve problems. The relationship between contracts and trust should therefore also be examined in more detail. In general it is argued that the presence of trust leads to a decrease in opportunism. As a result, relationships based on trust require less legal ordering. This means that contracts need less specification. Trust provides the basis and flexibility to cope with the uncertainties regarding future states of nature and with the risk of opportunism. Because trust exists in the intention and goodwill of the partner, one trusts that the partner is able and willing to cope with unexpected changes in the environment or in product design. The elements that have not been fully specified in the contract, can also be solved in this interactive manner of negotiation and joint problem solving. Also when

arguments evolve, they can be resolved in an open and constructive atmosphere, for which trust forms the basis. Because contracts need to be less specified, the establishment of a formal agreement requires less time and money. This is one of the elements that makes relationships based on trust more efficient. This leads to the following proposition:

Proposition 3c: Trust increases openness and decreases start-up problems with relationship establishment.

Also the monitoring of contracts may require less time and money if partners trust each other. If partner trusts the other's capabilities of performing an agreed task, they will feel less need to control and guide its execution (competence trust). In such a situation, partners acknowledge each other's specialist knowledge and core capabilities and make use of the complementary nature of their core capabilities. Monitoring will consist more of joint problem solving and jointly watching the progress and positive development of the relationship. Monitoring will focus less on the partner's propensity towards opportunism and on what might go wrong, and will hence be less focused on finding ways (legal or private ordering) to prevent this (e.g. by making threats to enforce execution).

Trust can thus be seen as a psychological contract that holds certain expectations of the behaviour of the other party. Trust is reflected in the presence of norms, values and ways of coping with each other, with problems and with uncertainty. If partners react differently than expected and thereby break certain rules of behaviour, trust will often break down very quickly. Such actions include misusing the other's trust (not executing the agreement as agreed), using coercive power to enforce behaviour (using the formal contract as a threat), or harming the other's interests. If such events take place, and the basis for trust is broken, social, and indirectly economic, sanctions (e.g. bad reputation, no future assignments) will result (Gulati 1995). If the basis for trust is solid (e.g. because of a long exchange history) and external or accidental factors can be shown to have led to these actions, partners may give each other the benefit of the doubt and the relationship may be continued. However, this will not occur often.

Some authors have argued that trust makes contracts unnecessary, and that contracts could even be seen as a sign of distrust (Bradach & Eccles 1989, Nooteboom 1996). This places legal and social governance in opposition to each other. Contracts might decrease the level of trust if used in a certain way (put too much emphasis on negative aspects, making use of coercion or frequent monitoring). Following from the process description of trust by Zand (1972) though, contract can also be understood in another way than has been done so far. Zand described how trust led to the willingness to be vulnerable and to commit to one's partner and the relationship. A contract can be seen as the consolidation of this commitment. As such, trust would precede contract and contract could be understood as the consolidation of trust. This is a completely different interpretation of contract than if contracts are seen as mechanisms to prevent opportunism. The discussion on the interrelatedness between contracts and trust leads to the following propositions:

Proposition 8a: The content and function of contracts are intended to prevent opportunism

Proposition 8b: In high trust situations, the function of contracts is not primarily aimed at preventing opportunism

Proposition 8c: Extensive contracts and intensive monitoring decrease the level of trust.

Legal ordering mechanisms such as contracts, licensing agreements and majority ownership can serve as a basis for relative dependence or power. They can influence the relationship by the sort of agreements that are laid down in the contract, by imposing sanctions, or, for example, by changing the ownership of a company. In this thesis I will explicitly focus on contracts to limit the complexity of the relationship between the different ordering mechanisms. Besides contracts, a partner must also have the ability to monitor the partner's behaviour in order to be able to govern the relationship. Monitoring is supervising and judging the realisation of the contract (Nooteboom 1994). It gives a firm the possibility of seeing whether its partner deviates from the (implicit or explicit) agreements. Without monitoring the partner does not know the actual behaviour of its partner and can thus not apply sanctions accordingly.

The content and function of contract and monitoring can be influenced by the presence of trust. If partners have a high level of trust, they will feel less need to put arrangements for, for example, conflict resolution and relationship termination in contracts because they will believe in their joint ability to work things out together. Furthermore, they will likely feel less need to monitor contract execution closely, because they will believe in the ability (competence trust) and willingness (goodwill trust) of their partner to act as agreed.

Social and private ordering: Dependence or interdependence?

Like contracts, power can also serve as a mechanism to prevent opportunistic behaviour. The central essence in most definitions of power is the ability to get someone to do something he/she would not have done otherwise (Gaski 1984)[15]. The relative power of a company implies two antecedents: relative dependence and monitoring (Nooteboom et al. 1995). Power is inversely related to dependence; the greater the dependence of B on A, the greater the power of A over B (Gaski 1984; Nooteboom 1996). Without B being dependent, A has no basis on which to exercise power because B will have alternative options to turn to and can ignore threats of sanctions. Relative dependence may be based on one or more of the following antecedents: (1) transaction specific investments, (2) relative value and (3) formal control (Nooteboom et al. 1995).

Transaction specific investments (investments which cannot be redeployed without loss of productive value if contracts should be interrupted (Williamson 1975)) make it harder to switch to another partner. These so-called switching costs keep the firm locked-in a relationship[16] which leads to dependence by the firm which has made these investments. The relatively less dependent party will as a result have more bargaining power (Anderson & Narus 1990, Macneil 1978).

Relative value refers to the surplus value an organisation has for its partner in proportion to alternative partners (Nooteboom 1994). The relative value for the partner may be based on assets such as technological skills, production facilities, market knowledge, access to distribution channels,

[15] Gaski (1984) based this conclusion on an extensive literature review on power and conflict theories.

[16] Nooteboom (1996) describes the lock-in effect as captivity.

or on intangible assets such as image or brand name. The more unique and crucial these assets are to the partner, the higher the relative value and hence dependence will be.

A third basis for relative dependence is formal control, i.e. authority based on formal agreements such as contracts, licensing agreements or majority ownership. Formal control was discussed in the previous section on the relationship between social and legal ordering.

The more dependent party in a relationship experiences relational risk to the extent of its dependence. First, this risk includes the chance that the partner will want to dissolve the relationship despite the agreement or intentions. The dependent party will suffer the costs of its specific investments and those of finding a new partner. Secondly, the risk entails the possibility that the partner will abuse the dependence to enforce certain behaviour such as lower prices, disproportionate gains or higher quality (Nooteboom 1994). The more dependent party can try to lower its dependence (reduce its risks), thereby changing the relationship. It can change its own dependence by searching for alternative partners, by cutting investments in the relationship or by developing other activities that reduce the relationship's importance. Another option is to become more attractive for the partner (e.g. by developing specialist knowledge), thereby increasing the partners dependence and developing a more balanced relationship (Nooteboom 1994).

Whereas changing the dependence in a relationship refers to private governance, partners can also use the social governance mechanism to cope with the risks associated with dependence. If trust is translated into an active instrument to influence and control interorganisational relationships, it refers to the action of A to (consciously) build a trust relationship with B. By establishing trust, B will more likely do things that he would not have done otherwise because he trusts A. By calling upon social norms and values, ethics or friendship, a partner can try to change its partner's propensity towards opportunism, protect itself against misuse of dependence (Wilkinson & Kipnis 1978) and shift the relationship into a trusting atmosphere.

Trust can also have an effect on the perception of dependence and risk. As discussed in Zand (1972), Mayer et al. (1995), and McAllister (1995), trust can increase a party's willingness to become vulnerable because he trust the other party not to misuse this dependence. In other words, dependence becomes less problematic if trust is present. This is because the perception of the propensity for opportunism by the more powerful partner is reduced.

Proposition 9: Dependence is perceived to be less problematic in high trust IORs

Summary

In this chapter, the bases, content and function of trust were illuminated in an IOR setting. To get a full understanding of the function of trust in IOR development, first a process model of IOR development was constructed. In the model interorganisational relationships are described as emerging from previous interaction and shared expectation and developing through recurrent stages of negotiation, commitment and execution. Trust plays an important role in the positive

development of IORs by stimulating openness and joint problem solving, and by decreasing defensive behaviour and destructive conflict.

The inclusion of trust and dynamics into the classical TCE framework has implications for the way in which the ordering mechanisms of legal and private governance function and can be interpreted. Legal and private ordering cannot only be complemented by social ordering, it can also change their function and the way in which their function should be interpreted. Both contract and dependence have a different meaning if considered from a trust perspective. Their content and function will be given fuller attention in the following two chapters. In chapter 4, the process model of IOR development will be used to describe and analyse the establishment and growth of interfirm relationships. In chapter 5, the findings of chapter 4 will be verified in four cases that are analysed for the content and function of trust, contract and dependence as determining the development of the relationships.

4

TIMP: A longitudinal case study

"You see interests changing in the course of time. Along the process, there is a continuous evaluation whether the cooperation generates enough returns in the short and long run. Everyone's interest is very clear: simply to generate turnover and to earn money" (Paul, interview February 1996).

4.1 Introduction

In chapters 2 and 3, theoretical building blocks were discussed and a model was built to describe and analyse the dynamic development of IORs. In the theoretical framework trust and dynamics were added to the transaction costs framework. In this way a richer theoretical model was derived to describe and analyse IORs, and two of the major criticisms of TCE were met, being the basic assumption of opportunism and the static character of TCE.

In this chapter, the findings of a longitudinal case study in a technological setting will be presented. As argued in chapter 2, a third point of criticism on transaction costs economics is its limited applicability in a technological setting. Therefore, first the theoretical concepts will be described and their meaning adapted to IORs in a technological setting. Second, the case study will be described following the five phases distinguished in the dynamic model from chapter 3. This description will not yet confront findings with theory. This to enable the reader to form his or her own interpretations. In chapter 5, the case observations will be analysed and confronted with the theoretical framework discussed in chapters 2 and 3.

4.2 The theoretical building blocks in a technological setting

In the dynamic study of IORs, not all the elements of transaction costs theory are equally important. Factors from TCE theory that are valuable for the analysis of IORs are:

Opportunism which refers to the chance that a partner will show opportunistic behaviour. Opportunistic behaviour is defined as self-interest seeking with guile (Williamson 1975). In a technological setting where knowledge is of crucial importance and the complexity and uncertainty of projects is high, fear of opportunism will likely focus on unwanted knowledge transfer (spill-over), opportunistic use of knowledge by a partner firm or opportunistic behaviour

by a specialist partner on whose knowledge one is highly dependent and for which one has no alternatives (hold-up).

Uncertainty/complexity which refers to the complexity and uncertainty of transactions. This concept can be used to explain the form of governance chosen (bilateral, trilateral or even unified governance) (Williamson 1975, 1985). In the technological field, which is central to this thesis, uncertainty and complexity are high. Cooperative relationships take place in a turbulent environment, the development trajectories for new products and technologies are uncertain, and projects are complex. From transaction costs theory one might expect that companies therefore choose bilateral, trilateral or unified governance. Trilateral governance can be found when contracts can not be sufficiently specified and partners want to consult an independent third party when problems arise. Unified governance can be found when the risk of spill-over is considered high.

The concepts of legal and private ordering which refer to contracts and monitoring, and private mechanisms (such as hostages) to influence and control the relationship development and the risks flowing from dependence and opportunism. In the technological setting described in this thesis legal ordering can be expected to be problematic (Williamson 1975, 1985). Contracts will be hard to specify ex ante because of uncertain development trajectories and may lead to undesirable rigidity in project execution. Monitoring can be difficult if contracts are incomplete and if monitoring requires specialist knowledge on the partner's technological field. Furthermore, the exact meaning of monitoring is hard to define in a technological setting in which projects are often jointly executed. Because of the joint execution, partners regularly meet, discuss and solve problems together. Their interaction is not aimed at monitoring or control but, by these close interactions, they do obtain knowledge of each other's execution of the agreement. As a result, monitoring will often not be explicitly present in IORs where projects are jointly executed since it is an integral part of the process.

Private ordering will likely be found to complement legal ordering. The balance in the relationship can be changed by increasing one's own relative value or decreasing one's partner's relative value, thereby increasing one's bargaining position and decreasing risks associated with dependence and opportunism (Nooteboom 1996). Credible commitments and threats (hostages) can be used to influence relationship development (Williamson 1985, 1996).

Transaction specific investments refer to those investments that are not redeployable without loss of productive value (Williamson 1975, 1985). These investments can increase a firm's dependence thereby increasing switching costs and the risk of a 'hold-up'. In order to be able to make credible commitments or threats (private ordering) transaction specific investments should be present (Williamson 1985, 1996). In a high technological setting, investments can be expected to be highly specific. Knowledge is jointly developed in specialist fields. Credible commitments can be made by investing in relationship specific knowledge and by openly sharing confidential knowledge. Hostages can be created out of confidential knowledge or, for example, by offering jointly developed technologies to one's partner's competitors.

From the adapted transaction costs theory of Nooteboom (1994, 1996) also a third governance mechanism can be derived, that of social ordering.

Social ordering refers to the use of norms, values and loyalty to decrease a partner's propensity towards opportunism. A major element of social ordering is trust which is expected to decrease the risks associated with dependence and opportunism. As a result it reduces the need for legal ordering and monitoring, and increases relationship efficiency (Nooteboom 1994, 1996). Social ordering can be expected to be of special importance in a technological setting. Since contracts cannot be fully specified, goodwill, constructive problem solving and loyalty are essential to fill in the gaps that the contract leaves open.

From the insights offered by the different authors on trust and from Zand (1972), important aspects and functions can be derived that give body to the concept of trust.

Trust can be divided into the propensity to trust, affect and cognition based trust. What specific functions the different bases of trust have in a technological setting has not yet been described. It is expected trust propensity will influence the willingness to engage in cooperative relationships (business culture), that affect based trust increases openness and joint problem solving and that cognition based trust has a less explicit effect on the relationship since it represents more of a basic condition. Affect and cognition based trust form the bases for goodwill and competence trust. Goodwill trust has been described as decreasing the propensity towards opportunism and competence trust as increasing the firm's value (Nooteboom 1996).

Openness refers to the degree to which information is shared openly and accurately. Openness is both a cause and a result of trust. In a technological setting openness is of crucial importance. Accurate and open information sharing will enable partners to learn from each others technological knowledge and to efficiently and effectively manage the project. Because trust decreases the fear of negative or opportunistic (spill-over) reactions, defensive behaviour is reduced and open discussions are possible that stimulate creativity and constructive problem solving. Especially affect and goodwill based trust will lead to openness.

Conflict refers to the extent to which disagreements take place, and harm the relationship. By increasing openness and decreasing defensive behaviour, trust decreases the frequency and destructiveness of conflict. In a technological setting, constant negotiation will be necessary due to environmental changes (fast technological developments) and unforeseen (and unforeseeable) changes in project planning and execution. If goodwill and competence trust are moderate or absent, these changes form a fertile ground from which conflicts can easily arise. If conflicts arise and cannot be constructively dealt with, they will decrease the level of trust.

Reading between the lines, the concepts derived from transaction costs theory mainly centre around how dependence is built up (asset specificity, number of alternatives) and on how the risks flowing from this dependence (opportunism, hold-up, spill-over) can be decreased (legal and private ordering). The extended transaction costs theory by Nooteboom remains in this strand by introducing trust as an alternative ordering mechanism. The concepts derived from trust literature instead focus on how commitments are made (willingness to be vulnerable) and on

how trust can increase openness and joint problem solving, thereby enabling mutual relationship success and satisfaction. In this sense the emphasis of both streams is different. Whereas transaction costs economics is mainly instrumental (which instrument to use, which organisation form to choose) and focuses on the prevention of undesirable events, the trust argument concentrates on constructive social interaction that enables good things to happen. Both functions are necessary. If only 'bad things' are prevented, the relationship will be minimalistic and will not provide an atmosphere in which technological projects can flourish. If only 'good things' are enabled, the partners will have nothing to fall back upon if the relationship encounters difficulties.

The theoretical concepts will not explicitly be discussed and analysed in this chapter. Instead, TIMP will be described using the dynamic model described in chapter 3. In the description of an IOR development using previous exchange, future expectations, negotiations, commitments, execution and evaluation, elements can be recognised that refer to trust building, and private and legal governance. An explicit analysis of the different ordering mechanisms will be made in chapter 5. In this chapter however, the TIMP case will be described in a way that the reader is given room for his or her own interpretation. The discussion on the applicability of TCE and trust concepts in a technological setting may be used as leads in this interpretation.

4.3 Research method

To obtain a thorough understanding of the development of TIMP, I used various sources of information. I started my investigation in September 1995, but could trace back the developments to October 1994 when the initiative for TIMP began. For the description of the developments I have made use of:

- Regular personal interviews (twice a year) with all TIMP members;
- personal interviews with external advisors of the regional development agency and innovation centre;
- attendance at all regular meetings and daily board meetings when important topics were discussed;
- minutes from regular and daily board meetings (my own as well as the official minutes);
- project plans (of the individual projects as well as of the TIMP group as a whole);
- financial administration (central administration as well as that of the individual companies);
- minutes of phone calls between individual companies;
- correspondence between individual companies, and;
- informal conversations during informal meetings or telephone calls.

The last round of personal interviews were held in April 1998. Afterwards I kept following the network developments by attending regular and informal meetings until March 1999. Up to 1997 I did not interfere in any TIMP matters and tried to minimise my influence on the group. Because of the frequent contacts and the increasingly close relationships with the participants, this passive attitude was at a certain moment no longer accepted. They did not accept an 'expert'

observer passively watching while they could be making mistakes. The members increasingly asked me for my opinions and in 1997 this led me to give up my 'independent' status. I gave advice when asked for and was involved in conflict resolution. Before February 1998 I did not tell the members my true research interest: to investigate the interaction between social, private and legal governance mechanisms. This was because talking about trust, conflict, contracts, dependence and power is difficult and could over influence the way in which parties develop their relationships. Furthermore, attention to these topics would likely give socially desirable answers. Therefore I only shared with them the more general research interest: how the network developed over time.

When I asked the members about my influence on the group, the answers varied. Some were of the opinion that I had had no influence at all, others described my function as that of a sounding board or a mirror and some thought I had enabled discussions on topics that were not open to discussion before. In short, my influence on the development of the network has been small. I did not influence structural choices and did not effect the establishment or breakdown of relationships. I did, however, influence perceptions and by asking questions I (unintentionally) forced group members to take a step backwards and evaluate the cooperation from some distance.

4.4 Twente Initiative for the development of Medical Products

The TIMP case tells the story of an interfirm network in the Twente region of the Netherlands. The group is called the Twente Initiative for the development of Medical Products (TIMP). The goal of the co-operation is new product development for the home-care and rehabilitation market using each other's complementary capabilities. Because of the proportional increase in the aged population, an increasing market for home-care and rehabilitation goods can be expected. To exploit this market opportunity a combination of technological capabilities, production skills, market knowledge and marketing skills is needed. In Twente, various companies and institutions were active in the medical field. Extensive theoretical knowledge was present at the university. Practical knowledge on state-of-the-art technologies and patient care was available at an internationally known rehabilitation centre, and technical and engineering capabilities were present at a number of regional technology-based firms. A combination of these competencies could help the firms jointly exploit this market opportunity.

A short history on the establishment of TIMP

Towards the end 1994, Christopher of the Development Centre Overijssel (DCO) received two requests as to whether it was possible for the DCO to stimulate activities in the medical industry. In the region medical knowledge and know-how were present, and if structural relations could be established between companies, this could lead to company growth and to regional development. One of the requests came from John, an experienced owner/manager who had recently started a new company aimed at new product development, mainly wheelchairs, for the medical market. The other request came from Paul, a university graduate, who had recently started a mechatronics

company for the development of new products that require integration of electronic and mechanical parts. Both asked the DCO if it was possible to increase activities in the medical field and both saw opportunities in the establishment of closer relationships between complementary companies.

Faced with these requests and with the knowledge that there would be a great potential in the region if well developed, Christopher took the initiative to contact more companies to see if there was wider interest for the plan. He took this initiative together with Marvin, a business consultant of the regional Innovation Centre (IC). Together they contacted companies that were active in the medical sector and that could supply complementary products or capabilities to fully develop the network's potential. The companies that were contacted were all small companies that were managed by the founder/owner of the company. The reactions to the initiative were positive. Christopher and Marvin therefore organised a meeting in which parties could meet each other and brainstorm about the possibilities and the manner in which the initiative could be transformed into a solid project plan. This first meeting took place in February 1995. Some of the parties at the meeting already knew each other. Others were unfamiliar with the other companies. The reason that the owners/managers were willing to join the meeting and discuss the idea, can, on the one hand, be seen to be that they knew participants through others or from previous experience, and on the other in that they envisaged a promising business opportunity. The TIMP parties' names, background and activities are summarised in Table 4.1.

Company and start-up date	**Mechatron 1993**	**Electric 1988**	**InduDesign 1988**	**Origin 1995**	**Ergonom 1991**
Owner/ mngr:	Paul	Patrick	Robert	John	Sylvester
Educational background	Mechanical engineering (UT)	Electronics Twente University	Electronics Twente University	Mechanical engineering	Ergonomics Twente University
Employees (1995-1999)	1995: 8 1999: 18	1995: 30 1999: 36	1995: 16 1999: 18	1995: 7 1999: 9	1995: 3 1999: 5
Core business	Engineering office in the field of industrial product development. Specialist in mechatronic solutions.	Development and production of devices for measurement, control and data registration to industrial and bio-medical application.	Industrial design of medical and other products. Knowledge of product development ergonomics, electronics.	Product development for the medical sector (home-care and rehabilitation) e.g. wheelchairs and patient lifts.	Recently started company specialising in the ergonomic design of products, instruments and work places.
Motive to join TIMP	To increase turnover and to become able to sell large projects to external parties through intensive TIMP cooperation.	To establish closer business relationships to become attractive for larger customers.	To increase turnover and to become able to sell large projects to external parties through intensive TIMP cooperation.	Increase potential for new product development (access to subsidy and complementary partners.	Sell expertise to increase turnover.
Function in the group	Expertise in mechatronic design.	Expertise in electronics and electric steering.	Expertise in industrial design.	Project champion and idea generator.	Human aspects of product design.

Company and start-up date	Joseph & Partners 1993	Tradecom 1995	Patent Int. 1992/1993	Innovation Centre	Twente University
Owner/mngr:	Joseph	James	Charlie	Marvin	Albert
Educational background	Physiotherapy Twente University	Marketing and sales	Pharmaceuticals Groningen University, Mngt. Studies	No data	Mechanical engineering Twente University
Employees (1995-1999)	1995: 2 1999: no data	1995: 17 1999: 22	1995: 3 1999: 3*	1995: 12** 1999: 12	1995: 6*** 1999: no data
Core business	Physiotherapeutic centre specialising in function distortions, elderly people. Active in developing new ideas to solve patient's problems.	Production and sales of medical products for home-care and rehabilitation. Knowledge of product development and new product requirements.	International matchmaker for international medical manufacturing companies in pharmaceuticals, medical diagnostics and devices.	SME support for the adoption and application of technological knowledge. Support in innovation and cooperative strategies.	Specialist knowledge of electronics, physics, biomedics, industrial design, technical feasibility studies.
Motive to join TIMP	To get a feeling of the new products that are developed for his customers.	Potential of new, innovative products that can be marketed and sold.	Potential products that can be licensed, patented or sold world-wide.	Regional development, employment and innovation.	Test theoretical knowledge and learn from practical experience.
Function in the group	Judge the quality and user-friendliness of the products.	To initiate and sell new product in the market of home care and rehabilitation.	Enable international expansion of TIMP.	Stimulating interfirm linkages between SMEs.	Supply of expert knowledge and idea-generation.

* Additionally involved in 4 international Joint Ventures
** Twelve employees in the SME support department of the Innovation Centre
*** Six university employees could be involved in TIMP projects

Table 4.1 Introduction to the TIMP partners.

As can be seen from the table, TIMP was comprised of highly complementary partners. The parties represented the innovation trajectory from idea generation to market introduction. Often the sales companies Origin and Tradecom would introduce an idea and discuss this with the engineering companies Mechatron, Electron, InduDesign and Ergonom. These four companies had each mastered different aspects of the product development process, including the functioning, looks and user friendliness of the product. For certain functions, Twente University could be asked for advice. The sales companies could market and distribute the products, Joseph & Partners could test the products in its physiotherapeutic centre and Patent International could be called upon when international potential was envisaged for the product. The supporting parties, the Innovation Centre and the Development Centre Overijssel, could provide counselling and advice on the establishment and formalisation of the network and provide subsidies to enable a large innovation potential.

4.5 Previous experience

In the theoretical model previous experience was described as being important because of the creation of preconditions for exchange. In the starting phase of a cooperation, personal reputations, prior exchange relationships and reputations play an important role. Knowledge of an exchange partner reduces uncertainty, creates expectations and obligations and enables early cooperation (Larson 1992). How these elements played a role in the TIMP case will next be described.

The transmission of trust to others

At the first meeting of TIMP in February 1995 many parties met for the first time. Earlier, they had spoken to Christopher and Marvin who had explained the idea and had told them something about the composition of the group. The willingness of parties to participate in that first meeting could to a great extent be explained by the previous experience they had had with the initiating parties. The potential TIMP members trusted the capabilities of Marvin (IC) and Christopher (DCO) to compose a promising network. Because unfamiliar members had been invited by them, they were given the benefit of the doubt.

The same phenomenon occurred among the business partners. Most companies considered someone else's familiarity with a company to be of great importance. Although they would not totally rely on someone else's judgement, they would certainly be less reluctant to accept another. This created a basic level of trust that made the start of the network possible. It removed the first barriers to cooperation and eased the further development of personal trust between the parties.

Familiarity breeds trust

A number of the parties had already met in earlier exchange relationships. John and Robert had worked together in the same company. Other partners had met in earlier buyer-seller relationships and even in cooperative projects. Patrick (Electro) and Paul (Mechatron) had cooperated on an earlier project. Robert (InduDesign), Paul and Sylvester (Ergonom) knew each other from earlier buyer-seller relationships. Albert (Twente University) knew Ergonom and Mechatron because they were spin-off companies of the university and Sylvester and Patrick met almost every week for marathon training. This stimulated the development of the trust the partners had in each other. Robert (February 1995) expressed this feeling as:

> "I don't fear any bad intention, I know the different partners. And if I don't know them, someone else knows them. You count on the others to vouch for the reliability of the partner he is introducing. It is hard to assess someone based on a single conversation. The partners in TIMP are all familiar to each other because they operate in the same field."

The TIMP partners were very much aware of the importance of familiarity with the others. It helped them to evaluate the potential of the group and to estimate the possible difficulties that could occur with the group's composition. Because many of the relationships already existed, some participants saw TIMP only as a formalisation of already existing informal exchange

relationships. This made it easier for them to decide on network participation because they knew what they were stepping into.

However, there were also some parties that were not known to anyone. These parties were approached with great care. Parties were reluctant to reveal information to them and were hesitant to engage in any relationship before it was completely clear what the other's motives were and what role they would fulfil. This process took considerable time (approximately a year) and effort (formal and informal meetings).

Similarity breeds trust

Parties that did not know each other from prior business exchange, often had another commonality to fall back upon. Most companies were founded by technical graduates from the Twente University. They all started their companies after graduation, sometimes with university support. Their companies were all established within the region, mostly within reach of the university (a few hundred metres to 10 kilometres). In all cases the owner/manager represented the company at the TIMP meetings. The companies were all small, the largest company (Electric) having 30 employees. Most companies were still in their start-up or growth phase, between one and ten years old. The parties themselves realised that this shared backgrounds played an important role in the establishment of their cooperative relationships. In the words of Robert (February 1996): Similarities should:

> "… exist because this makes cooperation easier. You use the same language, you have more things in which you can find commonalties and it is easier to integrate certain activities."

This similarity in business background played an important role in the initiation phase. Charlie and James came from a different region and educational background (marketing and sales instead of technical). In the beginning they were hardly given a chance to become integrated TIMP members. The technical university graduates all spoke the same professional language and knew how to behave according to regional norms and values (casual dress, not much talking). Charlie and James had another way of acting (smart dress, smooth talking) which made the understanding between the technical and commercial parties sometimes difficult. These differences could be recognised in remarks about other parties such as (Various anonymous partners, 1995-1997):

> "I do not understand what he is talking about" (or "He is only talking nonsense")
> "I do not know why he is joining our group"
> "They do not understand what I can do for them"
> "They do not have any ideas and do not even know what their own problems are"

It took partners approximately one year to slowly overcome the hesitance towards 'strangers'. They observed the new parties closely during meetings and used personal conversations to try to assess the other's character and mentality.

In short, previous experience was important in evaluating a party's trustworthiness and as a basis to build trust. If partners were unfamiliar with each other, trust could be transmitted through third parties, another participant's earlier experiences or through reputation. Similarity positively influenced the building of trust.

4.6 Future expectations

The second phase distinguished in the theoretical model concerns the conditions to build the relationship. Larson (1992) stressed the importance of mutual economic advantage that would lead firms to start cooperation. Often a trial period would be found in which one firm is the initiator. The conditions to build a relationship include the establishment of rules and procedures, the setting of clear expectations and the development of trust. How this process evolved in the TIMP case will be described next.

Individual and joint expectations

In the TIMP case expectations were formed based on the growing familiarity, and experienced similarity, with other partners. The expectations had to be sufficiently high to motivate the TIMP members to invest in the building of the network. What partners could expect was partly based on an assessment of future opportunities, but also on the expectations formed on the other members. After all, the success of future opportunities would be determined by the capabilities of individual partners, their willingness to use these capabilities cooperatively, and on the success of joint activities. The expectations formed of the other partners were not without doubt and misunderstanding. This was due to the gap that could exist between individual and shared goals.

During the first meetings of TIMP, it was therefore very important for the participants to get insights, into the reasons why the others joined the network. Especially between the engineering and sales companies fear existed. The sales companies would usually introduce a new product idea that an engineering firm would consequently develop. If product ideas would be openly shared in TIMP meetings, the engineering firms could 'steal' the idea and sell it to a competitor. Therefore the sales companies put much emphasis on secrecy of information and on procedures that would hinder competitors entering the group. To estimate of the risks of unwanted knowledge transfer and new firm entrance, it was important for them to know the other's strategies and future plans. This search for more information on the other party's goals and intentions was very implicit and took place gradually during formal and informal meetings.

Hidden agendas

This attitude changed when James introduced the words 'hidden agenda' into the group. James had a friend who studied psychology and who told him about the usefulness of getting hidden agendas out in the open. James himself had a conflict-seeking character and preferred argument and clarity over peace and suppressed conflict. He therefore invited his friend to one of the first TIMP meetings to discover the parties' hidden agendas. Although this act was not meant to sow

distrust, it created great concerns about other parties' motives and hindered the development of trust. Paul (October 1995) expressed this as follows:

> "You don't completely trust or distrust someone. It is better not to trust another 100%, you should always remain suspicious to a certain extent. That's why you have to check with others and with some background information whether partners are sincere and do not keep hidden agendas."

The incident with the hidden agendas gave name to something that all partners were aware of, but no one paid explicitly attention to; namely the potential gap between individual and collective goals. The word hidden agenda kept on plaguing the development of goodwill trust for several months. It gave rise to doubts on the others' willingness to comply with joint goals and interests. It did not effect competence trust since a party's willingness and capabilities are not connected.

Setting a joint goal

What the members could expect from the network as a whole was less clear to them than what they could expect from the individual members. After all, the final results of the network would be the result of individual initiatives and of the success of cooperative efforts. Still, the partners had developed broad expectations based on their own insights and on the perspectives that Christopher and Marvin held up to them. Christopher told parties of the possibility to get joint innovation projects subsidised by the European Fund for Regional Development (EFRD). For the small, often recently founded companies, this meant welcome support to their product development costs. These costs would be subsidised by 50%, which would enable companies to develop products at low, competitive costs. This would also make them attractive to external parties that wanted to outsource their product development activities. As a group, they could complement each other, making it possible to obtain larger and more complex projects from large, outsourcing companies. If these projects could be obtained and executed successfully, the network could build a reputation in the medical field through which more buyers could be attracted. This would benefit the development of the region, but more importantly to the members, it would benefit their own turnover and growth. They were all willing to contribute to the realisation of this goal.

4.7 Negotiations

As described in the theoretical model, the negotiation phase focuses on the formal bargaining process about expectations and motivations. Parties bargain over goals and ways of achieving them. Underlying this process are social-psychological processes of sense-making and getting to know and understand each other. This process is based on familiarity, similarity and a basic level of trust (for sense making) on the one hand, and based on joint interests and future expectations (for setting of goals) on the other. How formal bargaining and informal sense making occurred in the establishment of TIMP is described below.

Developing shared goals

In the negotiation phase it was important for the parties to find a shared domain in which they could agree to work co-operatively. Since Origin (John) had considerable financial resources to invest in the development of products for health care and rehabilitation, and the other parties were also active in this field, the medical sector was chosen as the focal segment. Origin could initiate and invest in a number of projects because of the 50% subsidy. The other parties, which were interested in increasing their turnover, could sell their expertise to Origin on an hourly basis. The realisation of Origin's goals, the development of as many new products as possible, implied the realisation of the members' individual goals. As a result Origin could more or less dictate the rules of the game during the starting phase of TIMP. Origin had money to spend and the other, often only recently established or growing companies were dependent on Origin for an increase in turnover. Although they were not forced to, they strongly adhered to John's wishes. No one wanted to harm their relationship with John because they feared that this would block the potential for future assignments and increased turnover.

Establishing a formal organisation structure

Now the goal had been defined, an organisation structure had to be chosen: How could the relationships be organised so that the group would be manageable and that efforts and gains would be spread evenly among parties? Christopher and Marvin proposed two alternative forms of organisation. The A option was one in which parties would share risk and gains, but in which no clear hierarchy would be present. The B option included a product champion who would invest in, and control, the product development. Other parties would be subcontracted and would sell their expertise by the hour to the project champion. The champion would bear all costs and therefore also take all profits. The options are illustrated in Figure 4.1.

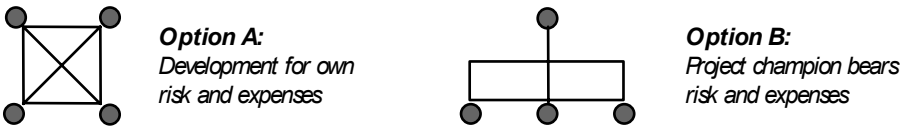


Figure 4.1 Structuring TIMP activities.

In the opinion of the TIMP members, option A could easily lead to conflict, especially because formal relationships had only recently been established. Without a clear project champion, and thus without a buyer-seller hierarchy, everything would have to be negotiated between equivalent partners. In case of conflicts there would be no authority base on which a solution could be enforced. Furthermore, the engineering companies were hesitant to jointly bear risks in a project. Since they were not able to judge the market potential for a product, they had to rely on someone else's judgement. For them this did not provide sufficient certainty to be willing to share the costs for product development. After all, they did not know whether the product could really be sold and would offer the required return on investment. Robert described this as follows:

> "I have a shelf full of products that commercial parties promised me they could sell as soon as I had developed them. But as soon as I had finished a product, these commercial parties had already invested in something else or they discovered that they had made a wrong market prognosis. Therefore I only bear joint risks with a partner of mine with whom I have been doing business for over ten years and whose market prognosis I know I can rely on."

Hence the less complex option B was chosen. Responsibility and risk bearing would be clearly dealt with by one party that would subsequently be the product owner and take profits. For TIMP this meant that Origin would mostly champion the projects and that engineering companies such as Mechatron and InduDesign would sell their expertise to them. The element that made this arrangement different from normal buyer-seller relationships was the way in which projects would be executed and evaluated. This is described below.

Establishing guidelines for project-execution and evaluation

Because parties wanted TIMP to become a success and to benefit equally from the network, they negotiated the way in which TIMP would have to operate. Negotiations not only concerned structural matters, but also codes of conduct. Product plans would be brought into product tenders and the participants would jointly discuss them. In this way, the product idea and plan for development would be assessed and commented on by experts from different professions (e.g. electronics, ergonomics, sales, patient comfort). The group decided to meet once a month to ensure clear and in-depth technical discussions that would enable them to learn from each other and to increase the quality of the TIMP projects.

After the projects had reached the tender stage and had been discussed within the group, an external advisory board would evaluate the project on its technical and market potential. The advisory board was composed of a representative of the Ministry of Economic Affairs, a facility manager of a regional hospital and a director of a medical homecare centre. Although the board was formally created to oversee the feasibility and quality of the projects, its most important function was to check the fair distribution of work and subsidies. The board could approve or disapprove of project proposals and were, to the companies, therefore the difference between getting a project subsidised or not. The group members could not make this decision themselves because they had too much self interest. Therefore, an internal decision would never be acceptable to the other members. The external board in turn, had to be very careful in making a decision. An independent judgement had to be given, irrespective of the company initiating the project. The perception of fair and equal treatment was of crucial importance to the credibility of the board and to the positive development of the cooperation.

Developing shared meanings and a common language

Negotiations did not only affect structural and formal matters though. During the negotiations, parties also got a chance to get to know each other better and to develop a common language. As described earlier, some TIMP members had difficulty understanding each other as they did not know each other and did not share similar backgrounds. In this light, James and Charlie were as

fish out of water in the TIMP group. Their differences to the rest of the group became visible in the general meetings and discussions. James was a marketer at a sales company in medical products. Charlie was the owner/manager of a small company that offered support in the search for international partners and that traded in patents, licences and companies. Their fundamentally different activities to those of the product engineers made it difficult for both 'camps' to get to know and understand each other's goals and way of doing business. Very general and simple discussions could lead to confusion as words were used and understood differently and ways of communication diverged.

This became especially clear in the interactions between James and John, who were, in addition to having different backgrounds, also completely different in character. John had a tendency to favour formal rules and strict agenda-driven negotiation. He was (partly as a result of his formal and punctual character) appointed as the chairman of meetings who would set and keep the agenda. James, being the opposite, had a distinct way of negotiating. He would constantly provoke the other members in order to find out the true characters behind the roles that they played as a company's owner/manager. In this way he wanted to unveil the genuine agendas that everyone had. This disturbed John who wanted to stick to the formal agenda and wanted to keep discipline and order in the meetings. This goal was regularly deflected by James' provocative remarks that would always lead to discussion. It took about one and a half years before John and James began to understand and trust each other. They started to understand that the other did not have unwanted intentions by acting in the way that he did and that it was more the way of expressing oneself that evoked misunderstandings. A similar process took place between the other TIMP members, although, less extreme character differences existed and mutual understanding was developed in several months.

As experience grew between the partners, a common understanding evolved and shared future expectations were formulated. The negotiation phase had been fruitful and the parties were ready to commit to the network, its goals and rules of cooperation.

4.8 Commitments

As described in the theoretical framework in chapter 3, in the commitment stage agreement is reached on the obligations and rules for future action. This agreement can either be codified in a formal relational contract or informally understood in a psychological contract among the parties. How this process took form in the TIMP network is described below.

Establishment of a formal organisational structure

On October 19th 1995, eight months after their first meeting, all participants signed the memorandum of association. The legal structure of TIMP was chosen as a foundation, which implied that decisions were democratically made and that a daily board had to be chosen by all the members. The daily board consisted of a chairman and two other members that were willing to spend their time and effort on the further development of TIMP. John was elected chairman since he volunteered and had the largest interest in making TIMP a success. The external

advisory board would watch over the quality of the projects and over a fair distribution of subsidies. Christopher and Marvin would monitor the developments from a distance and could be called upon if problems arose.

The foundation and general norms of behaviour would provide the general framework that would guide the relationships. On a project level, partners could draw up project-specific contracts. A project plan would guide daily operations and could be adjusted as the project developments required. TIMP would function as the general structure on which parties could fall back upon.

Preferred supplier procedure

In its structure, TIMP could be envisaged as an umbrella organisation within which all parties were represented. Under this umbrella different initiatives could arise. Product ideas could be brought into the tender system and complementary partners could be found within the group. The members committed themselves to always try to find a partner in the network before searching externally. They therefore installed a preferred supplier procedure. This implied that for a project proposal, TIMP members would first be asked to make an offer. If this offer was not in line with the champion's expectation (concerning price or way of addressing the problem), an external offer could be sought. Before accepting an offer from an external party though, TIMP parties would always get a second chance to rebid. The preferred supplier procedure, would give the group a good opportunity to develop their business relationships and mutual trust by being open and willing to take into account each other's interests.

Pledge of secrecy: The problem of spill-over

As early as in the second meeting, a pledge of secrecy concerning matters of development, production, marketing and knowledge/technology transfer was signed by all the network members. As already discussed in 4.4.1 concerns existed on the possible objectives of other parties and on what they might do with knowledge obtained in the TIMP group. Mainly the sales partners feared that their new product ideas could be 'stolen' and exploited by the engineering companies or by possible competitors. Therefore they stressed the importance of secrecy of information. Also for the engineering companies, secrecy of information was important. For them though, it was more a standard procedure that should protect against 'gossip' on general matters such as which companies were developing which products and how internal matters were managed. They were less afraid of unwanted knowledge transfer on technological matters or new product ideas. If a partner would steal and use another's knowledge or product idea, this would be recognisable and greatly harm the partner's reputation. Sales companies would no longer be willing to hire the engineering company to develop a new product and other engineering firms would not be willing to cooperate. As a result, a pledge of secrecy did not mean as much to them as it did to the sales companies.

The pledge of secrecy would be valid until five years after break up of TIMP. The parties realised though that, despite the pledge, strict protection of knowledge and know-how was

impossible. The thus far built bonds of trust served as a complementary mechanism to ease the fear of unwanted knowledge transfer.

Commitments as a psychological contract

The commitments, now formalised in contracts and laid down in a formal organisation structure, had more than just a formal meaning. The commitment phase could be envisaged as the ending point of the former stages of getting to know and understand each other, negotiating and coming to common goals and expectations. As such, the commitments could be seen as representative of the former processes. At the point in time when the TIMP members reached the commitment stage, everyone was enthusiastic and all were united in the direction in which activities would be developed. They had negotiated on what to do and how to do it. Their formal commitment, represented by their signature, reflected their willingness to positively contribute and invest in the realisation of the goals and to adhere to norms of behaviour. The development of trust had contributed to this willingness.

In short, commitment was embodied in both formal and psychological contracts and, in that way, reinforced the conviction among partners that everyone was truly willing to invest in the relationship. The formal contract entailed agreements on the organisation structure, codes of conduct (e.g. preferred supplier) and the external board of advisors. The psychological contract consisted of shared norms and values on cooperation, and of shared commitment on what partners wanted to achieve together.

4.9 Executions

As described in the theoretical framework, in the execution stage commitments and rules of action are carried into action. Initially, role behaviour may dominate interactions. Through repetitive interactions though, parties may become familiar with one another and interpersonal (as opposed to inter-role) trust may develop. How this evolved will be discussed next.

Project execution in small configurations of companies

In the TIMP case the execution stage introduced a completely new phase for all partners. Whereas in the negotiation and commitment phase all parties were involved in, and building towards, the same goal, the execution of projects would take place in only two or three firms. Each grouping could develop its own goals and way of working. In these relationships, the actual cooperation took place in the sense that partners had to work together on the development of a product and that they had to solve their problems jointly. This would be the proof of the pudding for the relationships so far developed. Sylvester (February 1996) described this feeling as:

> "First you have to get to know each other, I think that we have reached that stage. Now it is the question how strong these ties are. I think that this will not become clear before projects have been completed successfully. Only then can the added value of the cooperation be evaluated. If no value is added by the network, the parties will exit or attract other parties that do guarantee added value."

In the execution phase, for the first time, expectations could be tested. The competencies of the partner firms became visible and also the partners' cooperative attitude became clear. In this way, competence and goodwill trust could be evaluated. This evaluation would be of great influence on the willingness of partners to cooperate with each other again.

Start-up costs

As described, the commitment phase could actually be considered as the end of one period, and the execution phase as the start of another. To reach the execution stage took much time (8 months), effort and investment. Parties had to attend meetings, make a small contribution (1500 guilders), a project plan for the EFRD subsidy had to be written, and the foundation had to be established. This implied costs that did not immediately lead to returns and that could not be redeployed in another relationship. However, to the partners the potential loss of these costs was not considered problematic because they saw the investment as acquisition costs which sometimes lead to turnover and sometimes do not. Furthermore, they envisaged the process as a learning process that could well be applied in other situations.

Besides these costs, costs were also incurred when activities on concrete projects were started. Because parties were not used to working together in such an intensive way as in TIMP, they faced considerable start-up problems and hence costs in finding a way to efficiently work together. Origin, that championed most of the projects reported the following (December 1996):

> "Because of inefficiencies in integrating and managing activities, various activities have not been conducted well or have been executed twice. In this way project progress was delayed. Costs associated with the start-up of the cooperation with one partner amounted to 90.000 guilders for three projects."

Monitoring

In the execution of the projects, the monitoring function was not made explicit. Because partners knew each other well, the monitoring process could take place in many ways. When projects were jointly executed and the project members met regularly, monitoring actually took place unnoticed. Partners would jointly discuss problems and adapt plans and procedures to reach their goal. When the relationship was more like a buyer-supplier relationship, monitoring would often take place informally by informal phone calls on project progress. Partners would also just drop by to see how the project was progressing. Not that the control function of monitoring was emphasised, the process did rather function as showing interest and concern and solving potential problems together.

In one project the involvement in the project execution by one partner was so extensive that problems occurred. In this project, the project champion monitored the execution of a project very closely. The project was executed at the partner's office, but the project champion was so closely involved that it was actually him (and not the partner firm's manager) who managed the project. This although he lacked the expertise needed to manage the content of the project. As a result, he set the executing engineer on the wrong track. When both parties discovered that things were going wrong, they addressed the mistakes and the coordination was taken out of the hands of the project champion. The time and money incorrectly spent could however not be regained and implied considerable initial costs to the cooperation.

Habituation

From 1995 until the beginning of 1997, ten projects were executed. The initial goal had been to involve as many parties as possible in the projects to fully develop interfirm linkages and experience in working together. However, this goal was not achieved. As described before, most projects were initiated by Origin, and Origin mostly hired InduDesign and Mechatron for project execution. Although between the other members some linkages also developed, these did not include intensive cooperative relationships and did not generate the expected turnover. As a result, habituation only occurred between the organisations that really worked together. How this evolved depended on the type of relationship.

John, the owner/manager of Origin had his own way of joint working. He was of the opinion that cost, efficiency and quality consideration should always prevail over relational or psychological aspects. In his projects he would always first consider a TIMP member, but if that offer was not satisfactory he would turn to an external partner without a sense of guilt or regret. In his view this was the only way in which his business could survive.

This attitude was also recognisable in the way he cooperated. He did not experience any form of habituation in his relationships with others: he never adapted his way of working and did not change his methods or procedures. Because he was the project champion, he expected the supplying companies to adopt his methods and to adhere to his rules for cooperation. Although adjustments thus took place, no mutual adjustments were made and as a result no habituation was reached.

In the more balanced relationships between the engineering companies, true habituation grew. Because the partners met regularly they got to know each other personally and got insights into the other companies and their ways of doing business. Open discussion took place between participants about how they tackled certain problems (hiring or firing personnel, quality control systems, IT-systems). This benefited all without there being an economic incentive to help each other. They used each other's advice to adjust ways of working and to learn in general. Because they became increasingly used to each other's competencies and ways of working they knew whom to contact for a certain problem. In time an informal consultation network was formed that functioned very well. Partners would simply phone each other and be able to discuss certain topics without the fear of unwanted information transfer or being billed afterwards. Furthermore,

cooperation was more easily established. Partner knew what they could expect and how they should adapt to be able to cooperate with a certain partner.

Growing interdependence

Strong mutual habituation grew between three engineering companies: InduDesign, Mechatron and Electron. The relationship history of these companies went back to before TIMP. To them, TIMP actually meant a formalisation of existing relationships. In these previous contacts they had found out that their working procedures were compatible and could, with some mutual adaptation be improved. Because of their involvement in TIMP the three owner/managers met more frequently and slowly developed plans to form closer ties between their companies. Their companies were to a large extent complementary in nature, but they also had partly overlapping activities. They envisaged a great future if the companies' complementary capabilities could be combined and if the three of them could present themselves as one unity to external partners. Together they would be able to acquire large projects and could offer a client all specialist knowledge he could possibly require (electronics, mechanics, mechatronics, and industrial design). They would become one of The Netherlands' largest players in their field. Because they saw a great potential in the combination of their core capabilities, they decided to decrease their internal investments in capabilities that overlapped with each other. In that way they could work more efficiently. As a result, InduDesign stopped its electronics activities and Electron took these over. They also decided to jointly hire a system administrator, so that costs could be shared and operations could be governed more efficiently.

This process, fed by mutual business interest, trust and habituation, led to a growing interdependence between Electron, Mechatron an InduDesign. They also adopted a name for their joint initiative, EMI, representing the individual company names. They presented EMI at trade-fairs and produced brochures containing information about the individual firms and the joint initiative. They had an agreement on how to cope with acquisition and potential clients. They agreed to show complete openness about their clientele and to involve each other when possible. For the companies, information concerning their clients was the most sensitive information that they could share because their partners could possibly use this information to sell their own projects. They all knew though that such behaviour would be punished due to the agreement, that it would ruin the cooperation, and that future plans would no longer be obtainable. Furthermore, all three participants held confidential information about each other, which made opportunistic use of information unlikely.

Their joint projects were always governed by clear contracts that were laid down in detailed invoices and project plans. On one hand this was to provide clients with a good insight into the way in which their order was executed, on the other hand, these contracts offered the cooperation guidance and something to fall back upon.

Conflict

As mentioned earlier, ten products were developed in the TIMP group from 1995 to 1998. In the plans, as described in 1995, the execution of these projects was to lead to substantial cooperation, involving all TIMP partners. In practice though, only a few partners were involved in the projects: Origin as project champion and Mechatron and InduDesign as supplying partners. The engineering companies that had hoped to substantially increase their turnover were dissatisfied about the very dominant role of Origin and its limited effort to involve other companies in its project execution. Although they complained about this to each other, they did not openly protest it because they did not want to risk potential future assignments from Origin. This meant that a number of firms were just waiting for work without taking any initiative. The longer they waited, the more frustrated they got and the more they started to doubt Origin's intentions. At the end of 1996 an evaluation was made of the progress of the projects and of the financial streams within the network. The analysis confirmed the negative emotions that existed: Origin and only two other companies, InduDesign and Mechatron, consumed 80% of the subsidising money. This situation led to a path breaking conflict.

Patrick, the owner/manager of Electron, was one of the partners that was not involved in any project and hence did not get any revenues out of TIMP. Origin's project plan dating from 1995 foresaw a large order for him in 1996. It was not until the end of 1997 however that the project was started. Because of the planned cooperation as described in the project plan and the regular contacts, Patrick was expecting John to request a quotation. The request came but, in the same period, Patrick saw that John was also requesting quotations from other parties over which Electron did not seem to have a preferred supplier position. Instead John seemed to be searching for the lowest price. To Patrick this proved that John did not behave according to the preferred supplier agreement and that he did not have good, cooperative intentions. As a result, Patrick's trust in John was broken. As Patrick had already feared, the order was placed with a cheaper competitor. Because he had been waiting for two years for this order he became very angry and decided to make an issue of it. He wrote a letter to John and the daily board to draw attention to the fact that the preferred supplier procedure could be broken without the possibility of punishment. He wanted an external judgement on the matter and wanted the procedure to be supplemented by sanctions.

Conflict resolution and third party arbitration

The daily board asked Marvin of the Innovation Centre and myself to make an independent judgement of the situation and to give advice so that similar incidents could be prevented in the future. It proved to be difficult to judge who had been 'wrong' because both parties had - in their own perception - acted according to TIMP rules and procedures and had shown respect and goodwill towards their partner. Therefore the external advice focused on how the occurrence of conflict could be explained. The reason was found in the very different cooperative attitudes of the parties. John believed that costs and benefits should always prevail over sentiments of friendship or loyalty. Patrick believed that for long-term relationships to be developed, sacrifices

sometimes had to be made to achieve better results in the future. Because the parties had been reasoning according to their own perspective of how cooperation should develop, they did not expect nor understand the other's behaviour. The external judgement made these differences visible, thereby acknowledging the problem and relieving frustration. As a result the positive atmosphere that had, until then, characterised TIMP developments, was recreated although the relationship between John and Patrick was clearly broken.

The incident created the possibility of openly discussing the disappointing degree to which cooperative links had been established within the three to four years, especially in contrast to what had been 'promised' in the project plans. To an extent the early promises seemed to be a trick to get projects subsidised without having true intentions to cooperate and invest in the establishment of interorganisational relationships which was a major goal of TIMP. Therefore the TIMP participants took the initiative to install a new procedure that could stop project subsidies if the project champion did not involve the partners as described in the project plan. Also a new chairman was proposed to replace John to end the strong concentration of interests (John as project champion pursuing subsidies) and power (John as a chairman who can influence the agenda, meetings and potential entrance). At the end of 1998 the new, independent chairman was installed and at the beginning of 1999 the new procedure was formalised. The new procedure gave the external board the authority to halt project subsidies when project execution diverged from the project plan in a way that could not be satisfactory justified by the project champion. In this way, conflicts such as those between Patrick and John, and non-cooperative behaviour resulting from the dominant position of Origin, could be prevented.

Although third parties had not been involved earlier as explicitly as in the Electron incident, they had fulfilled mediation and conflict-preventing roles before. In the early phases of the establishment of TIMP they had chaired meetings. This enabled the group members to get to know each other and to find their own roles within the group. To give space for this process no difficult decisions were put on the agenda. Instead the agenda mainly contained procedural subjects which did not require the exchange of company or product specific information. As a result firms had the time to carefully explore new relationships and to build a level of trust on which exchange could later be based. Christopher and Marvin would mediate in the case of misunderstandings and irritations. In this way, direct confrontations between companies (which could hinder potential future cooperation) were prevented.

4.10 Evaluation

As described in the theoretical framework, evaluation of partners and the process of cooperation would take place based on fairness and efficiency. Efficiency refers to the most expeditious and least costly governance structure for undertaking a transaction, given production costs constraints. Equity can best be described as fair dealing. Based on such an evaluation parties will decide whether to continue to cooperate or whether alternative ways should be pursued to achieve set goals. In the first phases of TIMP this evaluation will have concerned the overall

functioning of the network. In later stages, evaluations were more focused on individual partners with whom parties had cooperated.

Efficiency and fairness of the cooperation

During the establishment of TIMP and the execution of project, constant evaluations took place by the individual members. They evaluated the efficiency of the network by comparing the time and money spent with the benefits gained. Most engineering companies applied a simple rule of thumb: in general acquisition of a project should count for up to 10% of the turnover generated by the project. The projects in TIMP would generate approximately 100,000 guilders, so they could spend 10,000 guilders on TIMP if one project was obtained. Paul (February 1996) described this as follows:

> "You see interests changing over the course of time. Along the process, there is a continuous evaluation whether the cooperation generates enough returns in the short and long run. Everyone's interest is very clear: simply to generate turnover and to earn money."

For the commercial partners the evaluation was even simpler; investing in TIMP projects was 50% cheaper than any other project (due to the EFRD subsidy). Other companies did not have such straightforward measures to evaluate investments and benefits. However, they also made their evaluations, and sometimes decided to leave.

Besides cost-benefit considerations, the members also evaluated the fairness of the cooperation. Important measures for fairness were the way in which work and subsidy were divided between the members, and the way in which members treated their partners. Since Origin played a dominant role in the first two years of TIMP, all eyes were on John and the way in which he divided the work among TIMP members. As described in the previous section, Origin made good use of the opportunity to get subsidies but executed most projects without substantial involvement of other parties. Some participants considered this unfair behaviour (leading to conflict in Patrick's case). Others perceived it as clever entrepreneurship. All supplying parties, though, wanted to break the dominance of Origin by inviting more commercial parties into the network. Only if new parties were to enter, would the desired project potential and increase in turnover for the engineering companies could be achieved. It was not in Origin's interest though to accept new party entrance, nor was it for TradeCom. After all, new entrants would compete for projects and subsidies. In a meeting James, the owner/manager of Tradecom (February 1998) described this as:

> "I have no interest at all in new entrants, to the contrary. The more you (the engineering companies) need me, the better it is for me. New entrants will only make it more difficult for me to execute my projects, since you have also other doors to knock on."

As a result, a discussion was started in which the engineering companies pleaded for the introduction of additional sales companies that could initiate more projects and the commercial parties pleaded against.

Entry

The discussion on new entrants remained very lively for a long time. Almost from the start, rumours and dissatisfaction could be heard on the grapevine. In September 1996 the problem was for the first time openly discussed in a general meeting. The engineering companies pleaded for the introduction of more companies and described their feeling of being held by their short hairs by Origin. In 1996 the engineering companies introduced a new partner. This entry was blocked though by a catch 22 situation that was held up to the new entrant by John as chairman of TIMP. The procedure claimed that the new entrant could not become a member before a project was introduced, but at the same time, it could not introduce a project before being a TIMP member. This made it impossible to enter the group and scared away potential sales parties. In this way the entry of two potential partners was prevented. It took until 1998 before the dominant position of Origin was broken (by the installation of a new chairman, the agreement guaranteeing TIMP member involvement in projects and by the EMI-coalition) and new members were accepted in the group.

Exit

Negative results sometimes led to changes in the relationships as described above, but it could also lead members to leave the group. Joseph (Joseph & Partners) had joined TIMP with the expectation of being able to propose and evaluate new products that could be used in his physiotherapeutic centre. However, in the course of 1996, he discovered that TIMP was very much driven by costs and benefits and that everyone already had their own product plans ready. For Joseph this implied that he had to wait on the sidelines until one of the TIMP members asked his advice on one of those projects. At the same time he realised that TIMP was very much dominated by Origin which conflicted with his idea of how the cooperation should be established. All this him to give a negative evaluation on the TIMP potential and made him decide to withdraw his membership.

Another partner that left the group was Albert from the Twente University. His enthusiasm for TIMP decreased as time passed. He joined the group to strengthen the relationship between the university and business practice. The university could serve as an expertise centre and, in the companies, ideas could be tested out. After a while though, Albert discovered that the small companies represented in TIMP were different from the ones he had been working with in the past (large international companies such as Philips, ASM-L). Whereas, in those large firms, problems or product ideas would be sharply defined, the processes in TIMP were less structured. In Albert's perception the companies did not understand what they themselves were doing, did not understand what their own problems were, and did not have the money for serious product development. During the meetings he regularly left early or fell asleep, showing his limited interest in TIMP matters. In the course of 1997 he left the group on personal grounds.

4.11 Conclusion: TIMP experiences and future expectations

After four years of cooperation, the TIMP network was nationally perceived to be a great success. The network presented itself at trade fairs and conferences on medical technologies. Furthermore, the TIMP case was presented as a best practice example at conferences of regional and national development agencies. However, from the case description in this chapter, it can be concluded that TIMP was not equally successful for everyone. Still it can be concluded that the interest of nearly all parties was sufficiently to remain a member of TIMP. This interest was not always directly connected with TIMP. For example, Patrick did not gain any turnover out of TIMP but did co-create and benefit from the EMI network that was embedded in TIMP relationships. Other parties that did not directly gain from TIMP also remained involved in TIMP because of their close cooperation with more central players such as Origin, Mechatron and InduDesign. This explained why the network continued to exist as a whole, even though benefits from the general network were disappointing.

The more balanced relationships that were established after the Electron incident led to a revival of trust in the future potential of TIMP. This was stimulated by the installation of a new chairman. Whereas the involvement of Marvin (IC) and Christopher (DCO) had been on an ad hoc basis, the new chairman could continually direct and stimulate TIMP developments. The new chairman was trusted by all members because of his business background and the absence of personal business interests in TIMP. The members believed that his presence could prevent unwanted developments and therefore they dared to fully commit themselves to the rebuilding of TIMP. Trust in the future was furthermore strengthened by the possibility of new entrants (and hence an increase in potential turnover) and by the new procedures that would warrant the establishment of more interfirm linkages.

In short, it can be concluded that trust was built up until commitments were made and the execution phase entered. In the execution phase, competence and goodwill trust were tested and in some instances disappointed. In both instances this could lead partners to permanently end their relationship. The breach of the psychological contract on norms of behaviour was thereafter supplemented by an agreement guaranteeing TIMP member involvement in the execution of projects. Thus, increasing formal regulations compensated for the failure of informal rules of behaviour. However, in other relationships expectations were met and trust had a solid basis. These developments are illustrated by the relationship development paths as presented in Figure 4.2.

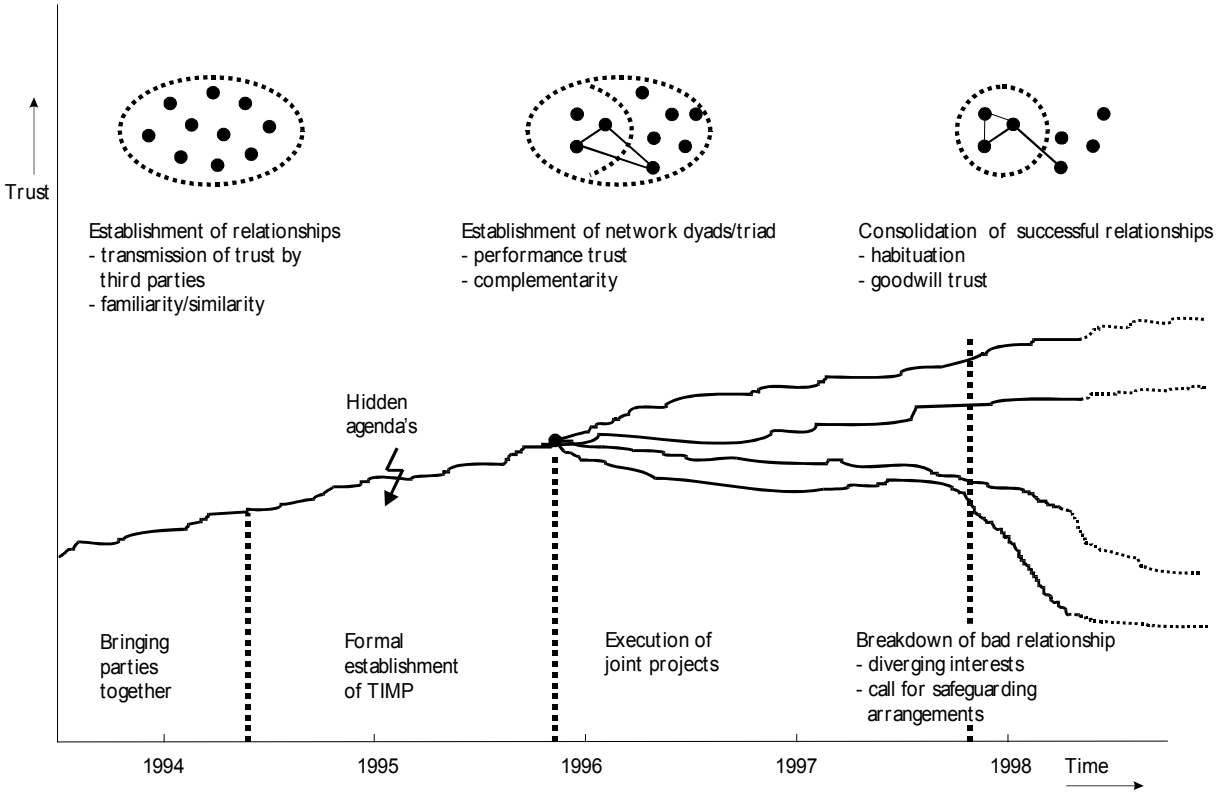


Figure 4.2 Relationship developments.

It also seems that third parties can play an important role in building and restoring trust. At the start, Marvin and Christopher transmitted trust thereby enabling the establishment of TIMP. In a later stage, the external board guaranteed a fair distribution of subsidies to enable the continuation of trust building. Finally, Marvin and myself served as independent external advisors to restore the relationships that had been damaged by the outbreak of conflict. The importance of third party arbitration became very clear, and an independent chairman was installed to fulfil this function on a permanent basis. This brought back trust in the future potential and fairness of TIMP as a whole.

5

TIMP analysis: Confronting theory with practice

"The dominance of Origin in the execution of projects has led to firm resistance. The engineering companies have threatened to blow up the cooperation because they know that Origin is as dependent on them as they are on Origin. After all, Origin needs the others for the continuation of its projects and to get its projects subsidised. Now the relations are much more balanced and John is like a chameleon, he adapts very well and chooses for his business interests."

5.1 Introduction

In this chapter, the developments at TIMP will be confronted with theory. In the introduction to chapter 4 the meaning of TCE factors and trust in a technological setting were described. Although most elements could be observed in the TIMP case, they were not made explicit so as to leave room for the reader to make his or her own interpretation. In this chapter the different concepts will be explicitly addressed.

In the introduction of chapter 4 on TCE and trust factors, it was anticipated that, because of high uncertainty/complexity and risks associated with spill-over, bilateral, trilateral or unified governance would be chosen to govern transactions in TIMP. Furthermore, it was expected that because of high uncertainty/complexity, contracts would be insufficiently specified. Monitoring was expected to have a different character to that described in theory because projects would be jointly executed and monitoring would hence be an integral part of project execution.

Contracts were expected to reflect both relational and economic aspects of the relationship (proposition 1) and become superfluous where trust was present (proposition 2). Different contracts functions were expected in situations characterised by primarily trust or fear of opportunism (propositions 8a, 8b), the first being also a sign of commitment where the latter merely serves as a safeguard. Lastly, active use of contracts to redirect IOR developments, or to intensively monitor a partner firm, may decrease the ability to jointly build trust (proposition 8c).

Because contracting is difficult under circumstances of high uncertainty/complexity, complementary ordering mechanisms are expected, alongside legal ordering. Especially when asymmetric dependence is present, conflict may be experienced by the more dependent partner (proposition 4). In such situations private ordering might be used to decrease unwanted

dependence, thereby increasing bargaining power (proposition 6). Asset specific investments are expected to play a large role in the build-up of this dependence.

Social ordering might be used to complement, or substitute, legal and private governance (proposition 6). It is expected that trust will increase relationship efficiency, reduce the risk of opportunism and make contracts superfluous (proposition 3a). This is because trust is expected to increase openness, reduce the level of conflict, enable constructive conflict resolution and decrease the level of start-up problems (propositions 3b, 3c). Trust is also expected to relieve the problems experienced with asymmetric dependence because of a decrease in defensive behaviour (proposition 9). In the analysis of trust in IORs it is expected that three bases of trust can be recognised - the propensity to trust, affect and cognition based trust (proposition 7) - that form the basis of goodwill and competence trust.

Propositions guiding the empirical research
– Proposition 1: Contracts reflect both relational and economic aspects of the relationship
– Proposition 2: Trust is a suitable alternative to extensive contracts under conditions of uncertainty/complexity
– Proposition 3a: Trust increases relationship efficiency, reduces the risk of opportunism and makes contracts superfluous
– Proposition 3b: Trust reduces the level of conflict and enables constructive conflict resolution
– Proposition 3c: Trust increases openness and decreases start-up problems with relationship establishment
– Proposition 4: Dependent companies have less bargaining power and experience more conflict
– Proposition 5: The relationships between trust, dependence and contract can only be uncovered by considering these mechanisms as dynamic and interrelated in a non-linear way
– Proposition 6: Social, legal and private ordering can be complementary in influencing and controlling IOR development and preventing opportunism
– Proposition 7: Trust can be distinguished by trust propensity, affect and cognition based trust. Affect and cognition based trust form the bases for goodwill and competence trust.
– Proposition 8a: The content and function of contracts are intended to prevent opportunism
– Proposition 8b: In high trust situations, the function of contracts is not primarily aimed at preventing opportunism
– Proposition 8c: Active use of contracts to redirect IOR developments or to intensively monitor the partner firm decreases the level of trust
– Proposition 9: Dependence is perceived to be less problematic in high trust IORs

Table 5.1 Propositions guiding the qualitative data analysis

To be able to uncover the relationships as described in the hypotheses, it was argued that dynamics should be introduced into the analysis of IORs (proposition 5), whereby trust, openness, opportunism and conflict can be both a cause and a result of each other. From the papers discussed in chapter 2, it could be understood that cause and result were often hardly recognisable in interorganisational relationships. By describing longitudinal cases and their sometimes fuzzy developments, I hypothesised that enriched insights would be gained. The

proposed relationships are summarised in Table 5.1 and will be tested in the remainder of this chapter.

5.2 Social ordering: The role of trust in relationship development

Trust has played an important role in the establishment and growth of TIMP. In the early days of TIMP, participants relied on the trust that was transferred by others and on the trust they had developed in previous experience with certain partners. This very basic level of trust served as a basis for negotiations. In later stages, trust developed into different forms of trust, and the level of trust increased or decreased as a result of professional and personal experience. How the different forms and functions of trust could be recognised in practice will be outlined below.

Propensity to trust

Because trust propensity is partly a personal characteristic, it was hard to discover the initial level of trust that the TIMP members had in general. Once the network had got through the first 'getting to know each other' phase, everyone was willing to trust and cooperate with each other. It therefore took a conflict to unveil the true propensity to trust and cooperate. This occurred during the conflict between Patrick and John over the absent order. In this situation individual trust propensity and its effect became evident. John was convinced that cost-benefit considerations should always dictate the way business was done. This implied that loyalty to existing business partners ceased if a more attractive partner was available. Furthermore, external relationships were only sought if benefits would evidently and within a certain time frame outweigh costs.

Patrick was convinced of the benefits that long-term relationships would bring to the individual companies. With his company he was focused on establishing long-term, friendly relationships in which start-up costs were accepted as a learning fee and in which benefits would sometimes come much later than expected. He was willing to wait a long time because he trusted his partner to appreciate his patience and loyalty and to pay back his efforts in the long run. He had had good experiences with this cooperative strategy with large customers and suppliers.

In the conflict, these different visions led to misunderstanding and stigmatisation. Patrick did not believe in John's good intentions because his way of reasoning was so very different from his. John did not understand Patrick's anger because, in his own perception, he had only acted according to business rules and had not harmed anyone's interests. These different ways of approaching the way business in done meant that the partners did not understand each other, and this increased the destructiveness of the conflict and made further cooperation impossible.

Affect based trust and goodwill trust

When partners entered negotiations, they got to know each other and trust could take on more forms. Similarity, in educational and business backgrounds, made it easier to informally talk to each other, joke a little, and to develop empathy with one another. In this way affect based trust could be developed. This form of trust stimulated open conversations and informal discussions

on project execution as well as internal organisation. It also made it easier to informally consult each other even when economic incentives were absent (for example ask for someone's opinion or advice). The effect of these developments was that an informal consulting network was established. This network was activated when problems occurred and when participants wanted to discuss topics informally before a formal decision had to be taken within the formal TIMP meetings. In this way, the informal, trusting relationships provided clear advantages of informal consultations, access to information, and the possibility to form opinions or coalitions before formal negotiations took place.

Another important effect of the development of affect based trust is that it strengthened the belief in the goodwill of another partners. Because affective bonds had been developed, one would not expect the other to harm one's interests. Something that, for a while, hindered this development was the emphasis placed on hidden agendas. This evoked suspicion about the intentions of the other parties. Would they let their own interests prevail or would they act according to joint interests and good will.

Cognition based trust and competence trust

In the early days of TIMP, familiarity provided the knowledge on which cognition based trust could be based. This resulted not only from previous exchange relationships but also from someone else's experiences or a party's reputation in the market. These sources provided knowledge on the other's competencies and performances. This knowledge grew in the recurrent negotiations and jointly executed projects. In their interactions they could evaluate the quality of the work done, the reliability of a man's word, and the overall technical and managerial skills a company possessed. Cognition based trust goes beyond the personal level and also involves the companies' employees and performance history. It forms the basis for competence trust in the capabilities and trustworthiness (e.g. in time delivery) of the partner firm. This does not mean though that the more knowledge that is obtained about a company's functioning, the more competence trust is developed. Developments can also lead to a decrease in trust.

As discussed earlier, some relationships were characterised by high start-up costs. In some of those relationships, problems remained in the coordination and execution of joint projects. Because of these problems, parties started to doubt each other's competencies. These feelings were expressed by Origin as:

> "I have tried to work together several times now, but the execution of the projects does not take place in a positive atmosphere. Because our partner employs many young people that are recently hired, they keep on reinventing the wheel. They have no experience and as a result the costs are much higher than the performance quality can justify."

More knowledge about a partner can thus also frustrate the build-up of competence trust in cases where performance falls below earlier expectations. A decrease in competence trust does not imply a decrease of goodwill trust. Origin who lost competence trust in their partner stated that:

> "I still trust them personally, I can still drop by and discuss things openly. But I lost my business trust in the way the company performs."

Habituation and integration of activities

In time, when parties were involved in recurrent negotiations and intensively worked together on projects, habituation evolved. Mutual understanding evolved about the way the other parties worked and how their behaviour could be interpreted. Methods and procedures became familiar and adaptations were made to align operations. Because parties had become familiar with each other's way of working, less negotiations were required to find the way in which a project would be managed. Partners mutually knew what to expect from each other. In this way, start-up problems and costs could be lowered and the efficiency of the relationship increased.

In the case of the three engineering companies, affect based trust and habituation led them to extend negotiations beyond pure project execution and discuss new forms of cooperation. In time this led them to integrate certain activities in their joint initiative EMI. They shared costs of, and presented themselves as a unit at trade fairs. They shared a system administrator and held weekly meetings to discuss their joint and individual activities. They adapted to each other's way of thinking and were able to create a unity that could, as one company, offer services and projects to large customers. Through these activities, the partners greatly increased their dependence on each other.

The costs expended in relationship build-up, trade fairs, advertising, marketing and partial integration (system administrator) represented relation specific investments that could not be redeployed. The decision to increase their dependence was partly based on the trusting and friendly relationships they had developed, and partly on the business opportunities they envisaged. They did not formalise their cooperation in contracts. They signed only a pledge of secrecy that was primarily aimed at secrecy and discreteness concerning potential customers. The cooperation further relied on word of mouth and on general intentions to achieve something really big together in the next 10 to 15 years. The trust on which they built to develop and pursue these plans was not calculative. There was no basis for calculation because of uncertainties concerning the developments of technologies, markets and their cooperation. Furthermore, their future plans were too broad and wrapped in too many uncertainties to argue that farsightedness offers an explanation for this type of cooperation. Mutual dependence and interests could explain the success of the current relationships. Their future plans, and investment for their realisation, though, could not be explained by conventional transaction costs thinking.

Limits and unwanted effects of trust and habituation

In the perception of the TIMP members, trust was very important in the way in which business was executed but also had its limitations. First of all, almost all the members emphasised that the trust they had in each other did not mean that they liked each other (as you would like a friend) or that they saw their relationships as friendship. Most of them emphasised the importance of

trust with a healthy dose of suspicion. They also emphasised that they did not want to mix business and personal relationships because that unnecessary complicated their relationships.

One partner considered the amount of trust and informality (affect based trust) as detrimental to the business mentality with which projects were executed and negotiations took place:

> "It almost seems as if rationality disappears if you are closely cooperating. The business mentality disappears, partners do not take their responsibility and are less careful and punctual. This until things go wrong. Than the relationship freezes and everyone defends his own interests. Therefore I would not mind to start at zero again and make clear agreements about tasks, responsibilities and payments. Our loose and informal form of organisation does not do us any good because, eventually, an external client has to pay for it."

Another unforeseen effect of trust was illustrated by the conflict that arose between the engineering companies and Origin. Because trust had developed in the TIMP group, parties felt more and more able to be open and thus also openly to express their dissatisfaction about certain things. This openness can therefore also lead to an increase in conflict. In TIMP it took until 1997 before members openly dared to criticise the way TIMP functioned in formal TIMP meetings. During the first two years they would not have dared to do this. For a long time, dissatisfaction was only expressed in the informal network and behind each other's backs so as not to offend anyone. It was not until the dominant position of Origin was broken that the uncomfortable dependent position of the engineering companies could openly be discussed. In short, this means that the openness created by trust can lead to conflict (which is not necessarily negative), and also that trust will only lead to openness if there is a more or less balanced relationship. In a situation of high dependence, a critical attitude by the dependent partner is unlikely.

Trust in IORs, theory and practice

From the previous analysis it can be concluded that trust propensity, affect and cognition based trust as distinguished in theory can also be recognised in practice, and form the basis of goodwill and competence trust (proposition 7). Their description provides a richer insight into the content and function of trust in IOR development. The exact functions of the different forms of trust are more difficult to recognise. Trust propensity seems related to the way companies cope with conflict (cooperative attitude). Whether higher trust propensity also relates to more external relationships cannot be concluded from the TIMP case because the members' attitude was hard to uncover.

Affect based trust increased openness, decreased defensive behaviour and made open discussion possible. The resulting goodwill trust led to open information sharing about projects and technologies without concrete fear of opportunism or spill-over. Affect based trust also formed the basis on which partners were willing to leave traditional forms of cooperation behind and to make more out of their relationship. This was observed in the EMI network. Within the

four and a half years of TIMP developments, only a few conflicts occurred. Whether this can be attributed to the role of affect based trust is not clear from the observations of a single case.

Cognition based trust was formed based on joint experiences. Cognition based trust sometimes led to competence trust. In other instances though, increased knowledge of another party would disappoint expectations and in that way reduce trust. Competence trust formed a strong evaluation criterion on which partners decided with whom the wanted to cooperate. In that sense competence trust might be seen as a basic condition and as a prerequisite for affect based trust. Competence trust led partners to engage in a relationship and affect based trust ensured that the relationship functioned well. These observations lead to a refinement of the hypothesised relationships:

> *Proposition 3: It is especially goodwill, or affect based trust, that increases relationship efficiency by decreasing start-up costs, destructive conflicts and defensive behaviour. Although affect based trust reduces opportunism, it does not make contracts superfluous (derived from propositions 3 a and 3b).*

> *Proposition 2: In a technological setting, the propensity to trust, affect and cognition based trust should be seen as enabling openness, creating joint opportunities, joint problem solving and loyalty. Here, trust complements rather than substitutes for contracts (derived from propositions 2 and 3c).*

In short, the conclusions from the theoretical chapters 2 and 3, are partly confirmed but also contradicted. Trust does increase openness and the possibilities of openly discussing problems. It also decreases the perceived risk of opportunism and can increase efficiency. These effects are, however not guaranteed and can have unwanted side effects. Openness can also increase the level of conflict and in such situations trust can easily break down, turning constructive discussions into destructive conflict (proposition 6). Habituation can increase the efficiency of the relationship, but excessive friendly and informal relationships can lead to inefficiencies and non-punctual behaviour, leading to higher costs.

5.3 Private ordering: The role of dependence in relationship development

Because contracting was expected to be difficult because of the uncertainty/complexity that characterised the TIMP projects, complementary ordering mechanisms were expected to be used, alongside legal ordering. Especially since asymmetric dependence was observed, conflict was expected to be experienced by the more dependent partners (propositions 4). It was expected that these parties would use private ordering mechanisms to decrease unwanted dependence and increase their bargaining power (proposition 6). Asset specific investments were expected to play a large role in the build-up of their dependence. The problems perceived with asymmetric dependence were expected to be mitigated because of the relatively trusting relationships between TIMP members (proposition 9). How these expectations were confirmed or rejected by the empirical observations will be discussed below.

The establishment of asymmetric dependence and outbreak of conflict

In the early days of TIMP, the members were not dependent on each other, or on the functioning of TIMP. Dependencies arose when business opportunities appeared. These opportunities mainly consisted of the many projects that Origin wanted to outsource. The supplying, recently started, companies were very eager to increase their turnover with project execution and as a result they felt dependent on Origin. The dependence was thus not primarily built-up because of transaction specific investments, these were not made in the first phase of TIMP. Instead, the potential turnover of an existing partner, and the chance to create the same potential with an alternative partner formed the basis on which members assessed their dependence. Often the investments made in the project were not considered specific. These investments mostly led to new insights and capabilities that could indirectly be used for other projects or clients. Furthermore, the risk associated with that part of the investments that was non-redeployable did not cause partners much concern because they envisaged the potential loss as part of normal business risk taking.

Because of the many projects Origin planned to outsource to the other TIMP members, and that members felt dependent on this business opportunity, Origin could dominate the way in which TIMP was developed and managed in the first phase. When the engineering companies started their own activities and started to envisage alternative business opportunities and clients, this dominance was broken. This was an important event for the further developments of TIMP. The development from the first period to the second will be further explored.

In the first instance the dependent position of the engineering companies was not considered problematic. Because Origin took almost all the initiative - being the one introducing projects, chairing meetings, and drawing-up plans - TIMP was clearly organised and well structured: John was the leader and the engineering companies would wait for their chance to join in. This relieved the stress on the initially still vulnerable relationships. No joint risks had to be taken and no negotiations were necessary on the sharing of costs or benefits. They trusted John to give them work and were optimistic about the future. When they discovered that John did not generate the amount of work they had been expecting, they started to doubt John's intentions and started to be concerned about their dependence. They increasingly perceived conflicts due to the dissatisfaction with Origin's position and the limited benefits that TIMP had brought. Some members discussed their discontent openly. This led to new insights and to initiatives to balance their dependence.

Changing the balance of dependence

The initiative of Electron, Mechatron and InduDesign to establish the EMI network made engineering companies interdependent on each other, but also they (unintentionally) formed a coalition that could balance Origin's dominance. Their increasingly strong relationships led to a new interpretation of their own position within TIMP. Instead of being small, autonomous entrepreneurs that should be happy with any work they were given, they became a large player in the market. The EMI network, with its complementary capabilities, could attract large, attractive

alternative customers. Together they started to envisage opportunities for their own product championship and for the active pursuance of alternative and larger customers. This development not only changed their perception of their dependence but also, in facto did change it. This was because they had created potential access to alternative customers, and were no longer solely dependent on TIMP members.

The less dependent position of the engineering companies increased their bargaining power. Because of the organisational transformation, they had a basis on which they could fall back and from which they could make credible threats. These threats were indeed made in practice (Anonymous, June 1997):

> "The dominance of Origin in the execution of projects has led to firm resistance. The engineering companies have threatened to blow up the cooperation because they know that Origin is as dependent on them as they are on Origin. After all, Origin needs the others for the continuation of its projects and to get its projects subsidised. Now the relations are much more balanced and John is like a chameleon, he adapts very well and chooses for his business interests."

Although the conflict resulting from the first uneven, and later shifting dependencies was discussed very clearly for over two years (1996-1998) the parties have experienced it differently. Companies that did benefit from TIMP projects and subsidies experienced less conflict than those who gained nothing. Most remarkably John, against whom most frustration was directed and who was aware of the criticism, did not experience the discussions as a conflict at all. When asked for his reaction to the agitated atmosphere within TIMP and the conflicting relationships, he had no awareness of any conflicts. In his perception the topics that were being discussed were no different than those discussed in every ordinary business relationship. These different perceptions of conflict illustrate the theoretical prediction that dependent companies would experience more conflict than firms in power.

Asset specificity and use of hostages

Whereas in the first TIMP phase emphasis was on the general network in which perceived dependence was based on potential business opportunities, the second phase concentrated on the execution of projects and the increasing interdependencies between two or three companies. As relationships became increasingly governed by trust in each other's competencies and goodwill, parties increased their dependence on each other. This was especially clear in the establishment of the EMI network. As described earlier these companies integrated certain activities, shared costs, adapted to each other's way of working, and formed EMI in which they jointly offered services and projects to large customers. The investments in EMI can all be considered relation specific investments that cannot be redeployed in alternative relationships. Because of the increased dependence the companies also needed more assurance that their dependence would not be misused. The most important assurance was their mutual dependence, which made switching

costs for all partners equally high. Another private ordering mechanisms could be recognised in the use of hostages.

In their cooperation Electron, Mechatron and InduDesign promised complete openness about projects, suppliers and (potential) customers. Acquisition would no longer take place on a strictly individual basis but would also consider the potential for the other EMI partners. This implied that the three partners would know all the relevant information about their partners' projects and customers. The giving of access to this knowledge would, from a trust perspective, be described as the willingness to be vulnerable. In TCE terms, it can be described as giving credible commitments or hostages. The participants themselves believed that this knowledge could never be used as hostages because the sharing of this information with third parties would terminate their relationship and would severely damage their business reputation. Because technological projects are often highly complex, partners are always needed - formally or informally - for help and advice. If their business reputation was broken because of the sharing of confidential information, they would risk their access to these informal consulting networks and manoeuvre themselves into a isolated position. For this reason the partners did not consider opportunistic use of knowledge realistic and relied totally on their mutual trust for alleviating their fear of unwanted knowledge transfer. As Paul expressed (October 1995):

> "You have to be able to drop by. Normally you cannot just enter an engineering firm, because this gives you access to knowledge that is not yet patented. … You really need a trust relationship to openly discuss with each other on the management level without fearing that the other will run away with it."

Another reason for not considering the use of hostages though, was that the other partners also possessed hostages and that the companies were equally dependent. In one case where dependence was not balanced and only one partner held a hostage, active use of hostages was reported as described below.

Mechatron had developed a product exclusively for Tradecom. After the product was completed and delivered a conflict arose. Tradecom could not pay the bill because of internal financial problems and tried to deny their obligations by arguing that Tradecom had never ordered Mechatron to develop the product. Mechatron had an important hostage in its hands though to enforce conflict settlement. The developed product was very attractive to Tradecom's competitor and a threat to offer the product to the competitor was an important source of power. The threat was especially credible because the contract, that stipulated the exclusiveness of Mechatron's developments for Tradecom, had expired a few months before the incident. Furthermore, only Mechatron held a hostage so a coercive use of power could not be reciprocated. In these circumstances, Tradecom was very much willing to solve the conflict in an acceptable way for Mechatron. Furthermore, because of the long period of previous cooperation, Mechatron did not want to make actual use of its hostage and choose to settle the dispute with Tradecom as satisfactorily as possible.

Dependence in IORs, theory and practice

From theory, as discussed in chapters 2 and 3, it was expected that dependence would play an important role in relationship development. It was expected that in situations of asymmetric dependence, the more dependent companies would have less bargaining power and experience more conflict (proposition 4). In such situations the more dependent partners were expected to use private ordering mechanisms to reduce their dependence and increase their bargaining power (proposition 6). In situations where a high level of trust is present, this effect was expected to be mitigated (proposition 9).

From the confrontation with TIMP findings it can be concluded that proposition 4 was confirmed. The more dependent engineering companies had less bargaining power and experienced more conflict. The perception of conflict differed greatly between parties. It was only experienced by the engineering companies and was not even perceived as conflict by the more powerful, commercial partners. As expected, parties used private ordering mechanisms to reduce their dependence. In the case of EMI their joint initiative created alternative business opportunities and clients, thereby reducing their perceived dependence. This has led to more balanced relationships and more bargaining power. However, it also introduced open discussion and conflict to the relationship. Because of the relatively good relationships and joint interests these problems could be jointly solved. In the incident between Patrick and John it was finally not dependence but a breach of trust that led to conflict. Patrick's trust in the goodwill of John was broken and this stopped him from pursuing any further cooperation. In the case between Mechatron and Tradecom, hostages were used to enforce behaviour. This confirms the idea that private ordering mechanisms can be used to govern relationships alongside legal governance (proposition 6).

Proposition 9 was not confirmed. Although most relationships were characterised by a high level of competence and goodwill trust, dependence was perceived to be problematic. However, it did not lead to conflict until doubts arose about the goodwill of Origin. It therefore remains unclear what the exact relationship is between trust and dependence. What is clear though is that the breakdown of dependence and the increase in openness and conflict go hand in hand. It is unclear whether the improved balance of dependence paved the way for openness, or that the increasing level of trust is responsible for this development. Probably these developments mutually reinforce each other. The increased level of goodwill trust leads partners to believe that the others will react constructively or at least reasonably to requests or complaints. The decreased level of dependence means that they can take the risk of evoking conflict because the potential loss is acceptable. This leads to the new, more refined, proposition:

Proposition 9: Trust and openness can only develop in a balanced relationship.

5.4 Legal ordering: The role of contracts in relationship development

From the earlier discussion it was expected that, because of high uncertainty/complexity and risks associated with spill-over, bilateral, trilateral or unified governance would be chosen within

TIMP to govern the technological projects. Furthermore, it was anticipated that, because of high uncertainty/complexity, contracts would be insufficiently specified and monitoring would be difficult. The contracts were expected to reflect both relational and economic aspects of the relationship (proposition 1) and to contain different arrangements in situations primarily characterised by trust or by fear of opportunism (propositions 8a, 8b). With high levels of trust, contracts were expected to become unnecessary (proposition 2) and active use of contracts to redirect IOR developments or to intensively monitor the partner firm were expected to decrease the ability to jointly build trust (proposition 8c).

In the technological setting in which TIMP relationships developed, parties were expected to draw up relational contracts (bilateral or unified governance) or neo-classical contracts (trilateral governance) depending on the frequency in which parties cooperated with each other. Because most TIMP transactions took place on a project basis, the frequency of transactions can probably best be described as occasional. Because the investment characteristics are idiosyncratic or mixed - involving both transaction specific investments in knowledge and products, and partly standardised techniques - trilateral governance would be the predicted form of governance. However, when parties involve each other regularly in different projects, the frequency of transactions can be better described as recurrent and, in these cases, bilateral governance would be predicted. Unified governance is not expected because dependence is moderate and the fear of opportunism and spill-over are low. This is partly because technological knowledge is built around complex projects and is thus to a great extent tacit.

In the TIMP case we see a dual contractual structure. The formal TIMP network is laid down in a foundation which has implication for its organisation structure (e.g. financial aspects and democratic decision procedures) and includes codes of conduct (confidentiality of information and preferred supplier procedure). This contract cannot be considered as a neo-classical or relational contract though because it does not provide binding rules for specified partners. It rather provides a framework, or a set of yielding rules that guide the group's developments. This contract can be difficult to understand in a transaction costs way of reasoning. The function of this contract is not primarily to prevent opportunism or to safeguard the risks flowing from dependence. Rather, it forms a written expression, by the members, that they are willing to commit themselves to the joint initiative. The second supplier procedure can, in this light, be interpreted as reflecting intended loyalty. However, as with the pledge of secrecy, the installation of this procedure can, of course, also be understood as a means of preventing opportunism.

When the agreements between partners on specific projects are confronted with expectations from theory, bilateral and trilateral governance can clearly be recognised. Per dyad or triad of firms formed to execute a project, project specific contracts were made. These contracts did not explicitly address the relationship, but established clear rules for project execution. These rules were laid down in the offers that were made for the projects. In these offers exact specifications were made based on for example:

1. Basic assumptions on which the project plan was based;

2. a project plan including descriptions of process, products and monitoring/review by customers;
3. the data on which (parts of) the product would be completed, and on which reviews would take place;
4. description of contingencies that could influence the progress of the project;
5. structure with which (re)negotiations would take place and the assignment of company representatives from all companies to be responsible for project progress;
6. ownership of knowledge.

When the partners signed the offer, they had a binding agreement on the points laid down in the contract. Although no advocates are needed for a contract such as this, it reflects business experience in coping with uncertain trajectories. Because uncertainty plays an important role, the members also emphasised the importance of trust, alongside formal agreement. As explained by Robert (April 1998):

> "Our business strategy is centred around open communication and mutual respect. In product design and development, this is the only way you can work efficiently. If you have to specify everything ex ante the project takes too much time and energy. Furthermore, product development is always surrounded with uncertainty and nothing can be predicted. Most of the time you specify the wrong things. If you cannot sort things out with your partner, it is better to accept only less complex projects."

Trust did thus not make contracts unnecessary in the TIMP project. The function of contracts was more complex though than described in chapter 2 on transaction costs theory. In TCE only the safeguarding function of contracts is emphasised. In contrast, the TIMP partners used the contracts as a framework to guide relationships and to fall back upon if certain contingencies arose. Emphasis was not laid on safeguarding 'what if' situations, because the future is very uncertain in a technological setting. Rather, the contract focused on the way the project would be managed and monitored. By giving the client insight into the development process and clarity about the way of working, a trust relationship could be built or maintained. This trust relationship should provide the basis to jointly solve contingencies as they arise.

In the literature, contracts and court are often referred to as mechanisms of ultimate appeal. In the TIMP case this was confirmed. When Patrick lost all faith in the cooperation with Origin (because he did not receive the promised order described in the project plan) he consciously made a 'case' out of the incident. In his 'case', he used the formal preferred supplier procedure to show Origin's 'guilt' and seek for punishment. He asked the daily board of TIMP to establish a 'trial', executed by external advisors, to judge the things that had happened and propose a way in which these incidents could be prevented or punished in the future.

Installing additional safeguards if goodwill trust decreases

This does signal an important loophole in the TIMP agreement. Parties that make mention of substantial cooperation between TIMP members in their project plans (this after all is one of the

joint TIMP goals and is a requirement to get a project subsidised), but eventually do not work together in the execution of the project, cannot be called to account. In this sense the rules are an empty shell, because there are no procedures that can be followed if someone breaks the rules. As a result, an additional procedure was proposed in 1998, after the conflict between Patrick and John: in future projects the progress will be closely monitored by the advisory board. Monitoring will take place based on the project plan that the product champion has written. If the execution of the project strongly diverges from the proposed plan, the board has the ability to stop the subsidy given to the project. Special attention will be given to the degree to which cooperative relationships are established. Although the commercial parties (and project champions) resisted the idea, the procedure was democratically accepted in February 1999. In this way TIMP has established a contract that clearly serves as a safeguard to prevent opportunistic use of the TIMP group as an access mechanism to subsidies.

Partners did not feel dependent because of the specific investments they had made in TIMP and in certain projects and relationships. Although the products were, on the whole, exclusively developed for one customer, the knowledge and experience gained in the development could be easily transferred and applied to other projects and relationships. This implies that no dependence was created due to specific investments and that no hold-up was created. This also provides a complementary explanation for the type of contracts that are found in technological projects. Because the parties are not locked into the relationship, the contracts are centred around the content of the project and its management, and less on the safeguarding against opportunism.

The function of contracts in IORs, theory and practice

From the earlier discussion it was expected that because of high uncertainty/complexity and risks associated with spill-over, bilateral, trilateral or unified governance would be chosen in TIMP to govern the technological projects. Furthermore, it was expected that because of high uncertainty/complexity, contracts would be insufficiently specified and monitoring would be difficult. The contracts were expected to reflect both relational and economic aspects of the relationship (proposition 1) and to contain different arrangements in situations primarily characterised by trust or by fear of opportunism (propositions 8a, 8b). With high levels of trust contracts were expected to become unnecessary (proposition 2) and active use of contracts to redirect IOR developments or to intensively monitor a partner firm was expected to decrease the ability to jointly build trust (proposition 8c).

As was expected from transaction costs theory, TIMP projects (that were characterised by high uncertainty/complexity and mostly occasional transactions) were organised with bilateral or trilateral governance. On the project level bilateral governance prevailed. Offers described the terms of agreement and haggling was used to sort out problems together. Where conflicts occurred, third parties would become temporarily involved to help parties solve their problems.

In relationships that were not project specific, i.e. the formal TIMP and EMI networks, use was made of trilateral governance. In these relationships third parties played a much more substantial role. They provided counselling during the start-up of the networks, chaired or joined

meetings, helped in building trust, and fulfilled the role of an independent third party in the case of misunderstandings and conflict. In both cases third parties can be understood as supplementing contracts. Instead of including arrangements for conflict resolution in the contract, and calling upon these norms in times of trouble, parties call upon trusted third parties to help them solve conflicts. Arbitration thus takes place based on trust in the third party and not based on the contract.

As was expected, parties experienced difficulty in drawing up extensive contracts. The offers that served as short project plans and specified the terms of agreement, in some cases even included sections that explicitly noted the possible occurrence of unexpected contingencies explicit. However, partners mostly relied on their personal relationships (goodwill trust) to jointly solve problems when contingencies arose. In this way trust complements contractual arrangements on topics that cannot be laid down ex ante due to uncertainty/complexity. Trust does not substitute for contracts though. The partners needed the contract to set goals and to operationally guide the execution of the project. In such a setting, contracts should neither be seen as a sign of trust (proposition 8b), nor as a means to prevent opportunism (proposition 8a). Instead, they should be envisaged as project plans or documents in which these different functions can be united and jointly used to manage the complexity associated with cooperative technological developments. This enriched insight into the relationship between trust and contract has already been translated into an adaptation of proposition 2 in the discussion on trust in IORs and is repeated below.

> *Proposition 2: In a technological setting, the propensity to trust, affect and cognition based trust should be envisaged as enabling openness, creating joint opportunities, joint problem solving and loyalty. Here, trust complements rather than substitutes contracts.*

The new insights into the function of contracts in IORs, lead to the adaptation of propositions 1, 8a and 8b into the following refined proposition:

> *Proposition 1: Contracts entail both arrangements that can be seen as a reflection of established trust relationships (commitment) and arrangements aimed at preventing opportunism (safeguard). Contracts will differ according to the emphasis placed on certain types of arrangements and in that way reflect the character of the relationship they represent.*

From the TIMP case there are no indications that more complete contracts decrease the level of trust (proposition 8). Rather the presence of contracts should be understood as described in proposition 1 above. It is possible though that a strong emphasis on the inclusion of safeguarding arrangements in drawing up contracts could decrease the level of trust. This leads to the following adaptation of the original proposition:

> *Proposition 8: To understand the relationship between contract and trust one should focus on the content rather than the completeness, presence or absence of contracts.*

For the second half of proposition 8, that claims that the active use of contracts and intensive monitoring would decrease the level of trust, some supporting indications were found. In some projects close monitoring led to problems and irritations, especially when influence and control were executed by someone from another organisation. It did not become clear though whether this led to a decrease in the level of trust. The original proposition concerning the relationship between trust and contract, is therefore adapted as follows:

> *Proposition 8b: The active use of contracts to redirect IOR developments or to intensively monitor a partner firm increases conflict while decreasing the level of trust and the relational and technological success of the relationship.*

5.5 The value of introducing dynamics into IOR analysis

Proposition 5 stated that the relationship between social and economic factors in IOR development could only be discovered by introducing dynamics into the analysis of IORs. From the TIMP case it could be concluded that the dynamic interrelatedness between trust, dependence and contract, and IOR development was only uncovered because a dynamic perspective was chosen. Through the dynamic analysis it becomes clear that many changes occur in the different ordering mechanisms as parties cooperate over time. Trust may be built but may just as easily deteriorate. Asymmetric dependence may cause conflict but can also be decreased to increase one's own bargaining position. Contracts may be drawn to show commitment to the network and provide leads for cooperation. In time though, if conflicts occur, contracts can be adjusted to protect against opportunism. From this analysis it can be concluded that IORs are not a static form of governance. Instead, IORs are an interactive process between actors and are in a constant state of flux. As internal and external conditions change, the form of governance may also change, for example by adjusting the contract or calling upon third parties to mediate. To describe this process, the developed process model is of most value during the starting phase of the cooperation when events still develop in a more or less sequential way. In later stages though, when sequential steps are no longer clearly recognisable, the underlying mechanisms of trust, dependence and contract are more suited in the analysis of IOR developments.

5.6 Conclusion: Trust, dependence and contracts in a technological setting

In chapter 2 I described the drawbacks of transaction costs economics that were relevant in the light of the subject of this thesis. These drawbacks were the denial of the role of trust in business exchange, the lack of dynamics in the description of (especially long term) exchange relationships and the limited applicability of transaction costs reasoning in a technological setting. In the TIMP case I have illuminated the dynamic developments in the relationships. In this, I paid attention to trust in relation to the traditional transaction costs factors such as private and legal ordering. From the analysis it became clear that the mechanisms are all valuable instruments to analyse and explain the way in which IORs develop. The main lesson seems to be that *'either-or'* relationships should not be sought, but *'both-and'* ones. Trust does not make contracts unnecessary. Neither is

the resistance to dependence alleviated if partners trust each other. Instead both trust, contracts, and conscious regulation of dependence form means to govern a relationship. This governance is not only directed towards the prevention of opportunism. It also tries to create the atmosphere needed to develop new products and generate new business opportunities. In this interpretation, the function and meaning of the traditional governance mechanisms of contract and dependence become different. This will be further explored in chapter 6 by analysing additional cases and by exploring the relationship between trust, dependence and contract in more detail.

Adapted propositions
– Proposition 1: Contracts entail both arrangements that can be seen as a reflection of established trust relationships (commitment) and arrangements aimed at preventing opportunism (safeguard). Contracts will differ according to the emphasis placed on certain types of arrangements and in that way reflect the character of the relationship they represent.
– Proposition 2: In a technological setting, the propensity to trust, affect and cognition based trust should be envisaged as enabling openness, creating joint opportunities, problem solving and loyalty. Here, trust complements rather than substitutes contracts.
– Propositions 3: It is especially goodwill or affect based trust that increases relationship efficiency by decreasing start-up costs, destructive conflict and defensive behaviour. Although affect based trust reduces opportunism, it does not make contracts superfluous.
– Proposition 4: Dependent companies have less bargaining power and experience more conflict.
– Proposition 5: The relationships between trust, dependence and contract can only be uncovered by considering these mechanisms as dynamic and interrelated in a non-linear way.
– Proposition 6: Social, legal and private ordering can be complementary in influencing and controlling IOR development and preventing opportunism.
– Proposition 7: Trust can be distinguished by trust propensity, affect and cognition based trust. Affect and cognition based trust form the bases for goodwill and competence trust.
– Proposition 8a: To understand the relation between contract and trust one should focus on the content rather than the completeness, presence or absence of contracts.
– Proposition 8b: Active use of contracts to redirect IOR developments or to intensively monitor the partner firm increases conflict while decreasing the level of trust and the relational and technological success of the relationship.
– Proposition 9: Trust and openness can only develop in a balanced relationship.

Table 5.2 Propositions adapted based on TIMP findings.

6

Seven longitudinal cases in different IOR atmospheres

"The assumption of opportunism can become a self-fulfilling prophecy whereby opportunistic behaviour will increase with sanctions and incentives imposed to curtail it, thus creating the need for even stronger and more elaborate sanctions and incentives." (Goshal & Moran 1996).

6.1 Introduction

The confrontation of the TIMP case findings of chapter 5 with the theoretical expectations from chapters 2 and 3 provided interesting new and alternative insights into the relationships between trust, dependence and contracts. Since these insights are based only on one case, they did not pretend to present definitive answers. Instead, the findings mainly raised new questions. Many findings did not confirm the original propositions and as a result raised further questions. Some issues that arose were:

- The different contents and functions of contracts; should contracts be understood as a safeguard against opportunism, as argued in theory, or as commitment to the relationship as observed in practice. Furthermore, can these different functions be interpreted from the type of arrangements specified in the contract.
- The relationship between trust and contract; can trust substitute for contracts as argued in theory or should trust be seen as complementary to contracts and as a means to enable contracting, as observed in the TIMP case.
- The relationship between trust and dependence; will trust always lead to openness and constructive conflict resolution as argued in theory, or can this only occur in a situation of symmetric dependence as suggested by the empirical findings.

To increase the understanding of the complex dynamic relationships between trust, contract and dependence in the development of IORs, further study was thus required. This chapter therefore explores the function and meaning of trust, dependence and contract. The first section develops an alternative explanation of the relationship between trust, dependence and contract. This is achieved by differentiating between the dynamics of dependence and contract in a primarily trusting atmosphere and those in one, more dominated by fear of opportunism. Secondly, seven case studies will be discussed that illustrate the meaning and function of dependence and contract in 'trusting' and

'opportunistic' atmospheres. From this analysis, preliminary conclusions will be derived on the differences that exist between relationships where the focus is on trust and fear of opportunism is rather limited, and those in which fear of opportunism plays a prominent role. The findings from the cases will again be confronted with traditional transaction cost reasoning (chapter 2) and with the adapted propositions from chapter 5.

6.2 Alternative insights into trust, dependence and contracts

From the TIMP analysis it can be concluded that by adopting a process approach to IORs that includes both trust and TCE factors, a different understanding of IORs emerges than when solely using traditional transaction costs explanations[17]. The role of trust becomes especially clear in its dynamic interaction with the other governance mechanism. Legal and private governance mechanisms are designed to prevent opportunism. In the articles discussed in Chapter 2 trust was treated in a similar fashion. In these articles trust was discussed as reducing fear of opportunism and thereby reducing the need for safeguards/contracts. From the TIMP analysis we learn though, that trust has more functions than simply the reduction of opportunism. If IORs are based on trust, a different atmosphere is created in which a relationship can develop positively. Goshal & Moran (1996) already noted this contradiction between the negative influence of safeguarding mechanisms and the positive effect of trust. They stated that a focus on opportunism and safeguards would create a negative spiral in the development of the relationship. Zand (1972) described the positive spiral initiated by trust. These observations indicate that if opportunism is given a less central role, and trust is given more emphasis, new relationships can be discovered between trust, dependence and contract. This will be considered below.

An alternative meaning of contract in a trusting atmosphere

As could be understood from the articles discussed in Chapter 2, trust is mainly considered important because it decreases the propensity towards opportunism and thereby the need for contract and monitoring. As a result relationships become more efficient and transaction costs are reduced.

From chapter 3 it became clear that trust is not a one-dimensional concept and has more functions than just decreasing opportunism. The propensity to trust, cognition and affect based trust were distinguished. Its essence was defined as the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party (Mayer et al. 1995). Trust was, from a dynamic perspective, described as increasing openness, joint problem solving capacity (decreasing conflict) and the willingness to become vulnerable (decreasing defensive behaviour). This function of trust was more focused on what parties could jointly achieve than on

[17] This alternative interpretation was first presented in the paper 'Bringing trust and dynamics into the analysis of interorganisational relationships' by Klein Woolthuis & Hillebrand (1998).

how parties could prevent opportunistic behaviour. These goals and way of achieving them could be laid down in a contract reflecting commitment to the relationship and trust in partners.

From the TIMP description and analysis in chapters 4 and 5, it became clear that both functions of a contract could be recognised, and that they could fulfil complementary as well as substitutive functions. The major finding from these chapters was that it was not the completeness, presence or absence of contracts that was most important in understanding the relationship between trust and contract. Instead, the content of the contract was found to differ for different types of transactions (project specific versus relation specific as in the case of the formal TIMP network). As a result, it was proposed that contracts would differ according to the emphasis placed on certain types of arrangements (reflecting trust and commitment and/or safeguarding opportunism) and in that way reflect the characteristics of the IOR they represent.

If these findings are confronted with the theoretical propositions from chapter 2, contracts have a broader meaning and the argument that the presence of trust reduces opportunism and the need for contract and monitoring becomes less evident. What becomes clear is that this hypothesised relationship is only logical *as long as* opportunism is considered to be of crucial concern for partners in the economic exchange. In the TCE framework, as well as in most of the articles discussed, contracts are interpreted as strictly legalistic documents that have to prevent the opportunism that always lies in wait. In this interpretation trust and contract become each other's logical counterparts.

This is not the only interpretation that can be given to the relationship between trust and contract though. As can be understood from the contributions of Macneil (1980), Ring & Van de Ven (1994) and the TIMP findings, trust and contract can also link and reinforce each other. If opportunism is given a less central role, and contracts are interpreted in a broader sense, an alternative interpretation of the relationship between trust and contract becomes valid. As partners get to know each other, and negotiate about their potential relationship and joint projects, trust may develop between them. This trust will lead them to feel comfortable with each other and will increase their willingness to commit to the relationship. Furthermore, broad ideas about cooperation can be transformed into clear goals and plans as to how cooperation can be executed and how joint investments and benefits may be shared. Only after trust and commitment have been established, and after clear goals and ways of achieving them have been developed, will partners be *willing and able* to lay agreements down in contracts. If trust is not present, partners will hesitate to tie themselves down to formal agreements. In this situation it will be difficult to come to a sound agreement (extensive contract) since the partners will show defensive behaviour because of their fear of opportunism. This may lead to incomplete contracts or even the absence of legal arrangements.

In this alternative explanation, contracts (or an increase in the level of quasi integration) do not primarily have a safeguarding function. It is not primarily a fear of opportunism that makes partners turn to legal governance mechanisms. To the contrary, they use contracts to make their commitment to the relationship explicit and tangible (Klein Woolthuis 1996, 1998). The fact that they do so will be a signal to their partner that they are committed to the relationship. This relieves the fear of opportunism and stimulates the development of trust between the partners. If this alternative logic is followed, trust can lead to the establishment of contract, and the signing of a contract can increase the level of trust. In this way the outcome of Anderson & Narus' 1990 study that trust increases the

level of quasi integration can be explained. Also the conclusion of Zaheer & Venkatraman (1995) that trust evolves from cooperation and communication is no longer surprising, since trust is both the cause and the result of cooperation and communication (c.f. Nooteboom 1996). This makes it very clear that any analysis of IORs should include some dynamics. Without dynamics the circular relationships between the development of trust and the function of contracts in IORs would not be discovered.

The relationship between trust and contract if dynamics is added

By taking a process view of IORs and by giving trust a more central role, contracts get a different meaning. The first difference is that contracts can be envisaged as a process in themselves since a contract embodies the negotiation and commitment stages that partners go through. As such, much may be read from the contract. If the focus is on what partners want to do together (positive) this might indicate a trusting relationship. If arrangements concerning conflict resolution and relationship termination dominate the contract fear of opportunism might be dominant. Furthermore the balance in the relationship might be recognised in the way costs and benefits are shared (unfair sharing indicating asymmetric dependence).

The second difference is that the presence or absence of contracts cannot be interpreted in a linear way. In a trusting atmosphere, the presence of contracts might be interpreted as the embodiment of commitment and trust. Extensive contracts can be established because defensive behaviour is absent and the partners can easily reach an agreement. The focus in these contracts will likely be on joint goals and detailed project plans. In an atmosphere in which fear of opportunism is more clearly present, contracts are more likely to be interpreted as safeguards against opportunism. In such a situation, partners show defensive behaviour and are not willing to commit to a relationship before safeguards are installed to protect their interests. As a result, the contractual arrangements will likely focus on secrecy of information, protection of ownership, conflict resolution and relationship termination.

It is important to note though that these functions are mutually exclusive. Since IORs are dynamic, and change over time, different functions of a contract are needed in different stages of the same relationship. Whereas the establishment of contract reflects a process of negotiations and getting to know each other, and the signing of contracts can be interpreted as a sign of trust and commitment, this same contract can, in a later stage, be used to monitor and safeguard the relationship. Contracts will mostly be a mixture of arrangements, and will fulfil different functions at different moments in the relationship development. Recall also the findings from the TIMP study that the partners trusted each other, but always with a healthy dose of suspicion.The two dynamic relationships between trust and contract are illustrated in Figure 6.1.

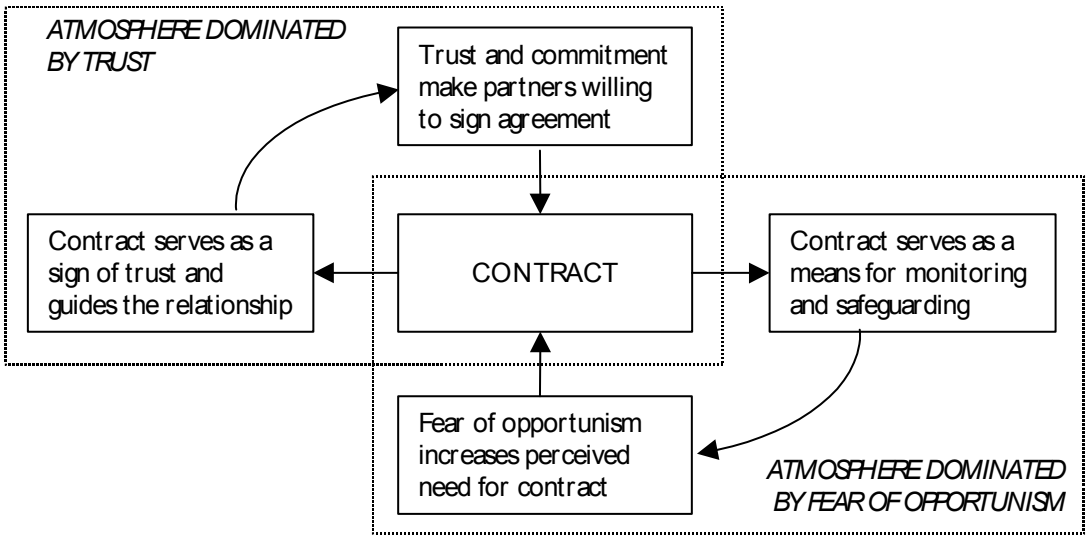


Figure 6.1 Atmosphere and the meaning of contract.

The meaning of trust and contract in a situation of asymmetric dependence

Not only will the use and meaning of contracts differ in different IOR settings, the use and meaning of trust might also differ in situations of asymmetric, as opposed to symmetric, dependence. In a situation of asymmetric dependence, the more dependent partner will probably perceive more fear of opportunism. After all, this partner has less to fall back upon to make credible threats if opportunism occurs. The best option in such a situation is to change the balance of dependence by using private ordering mechanisms. The more dependent partner could decrease its dependence by increasing its relative value or by decreasing the relative value of its partner by, for example, searching for alternative partners or by creating hostages (Nooteboom 1996). In practice this will often be difficult and time consuming. In a high-tech setting, specialist expertise to increase one's value is not easily obtained and the number of alternative partners is often limited. The use of hostages might be effective in the short term, but might damage one's reputation and business opportunities in the long run (c.f. TIMP findings).

Another option lies in the use of contractual safeguards. The more dependent a partner is, the more it will perceive a strong need for formalisation of agreements. In this way a basis is created on which to fall back if opportunism occurs. In practice though contracts will be difficult to negotiate from a dependent (weak) position. The dependent partner will not have sufficient bargaining power to enforce the formalisation of agreements. If agreements are being formalised, the dependent partner might also lack the bargaining power to negotiate a fair contract. The risk exists that costs and benefits are unfairly shared. The relationship between asymmetric dependence and the felt need for contracting is illustrated in Figure 6.2.

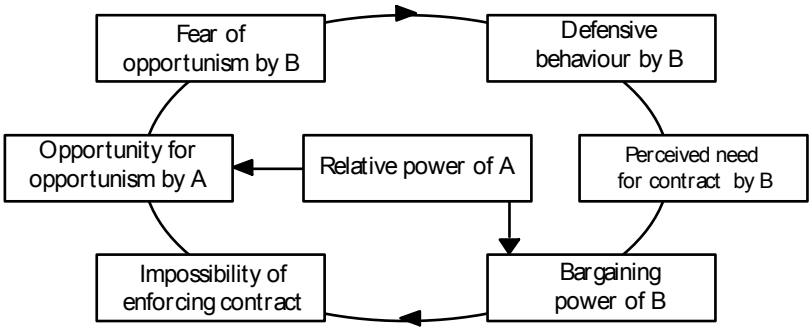


Figure 6.2: Asymmetric dependence and the felt need for contracting.

Following from the above discussion, social ordering might be seen as the most suitable mechanism to deal with a situation of asymmetric dependence and fear of opportunism. Wilkinson & Kipnis (1978) already described the use of social mechanisms to exert influence. By calling upon social norms and values, ethics or friendship, the partner can try to change its partner's propensity towards opportunism, protect itself against mis-use of dependence (Wilkinson & Kipnis 1978) and shift the relationship into a trusting atmosphere. As such, trust can be seen as a governance mechanism of the poor: social mechanisms for those who have nothing else to fall back upon. The role of trust to deal with a more powerful partner has also been addressed in IORs between small and large companies by Mønsted (1998).

In the TIMP case, however, it was found that trust and openness did not function well in relationship development until a more balanced relationship had been established. This raises the question whether trust can be meaningful in a situation of asymmetric dependence. According to Luhmann (1988) trust is rather meaningless in a situation of strong asymmetric dependence. In such a situation it is not willingness that leads a party to cooperate and become vulnerable. Rather, the dependent partner has no choice, and the situation should be described as one of confidence (Luhmann 1988). This argument is only true though when trust is consciously used as an ordering mechanism. Trust might also spontaneously develop, or result from previous relationships. In such situations trust has already been established and mutual loyalty may render fear of opportunism relatively unimportant compared to the benefits of joint business opportunities in a trusting atmosphere. The relationship between trust and dependence is illustrated in Figure 6.3.

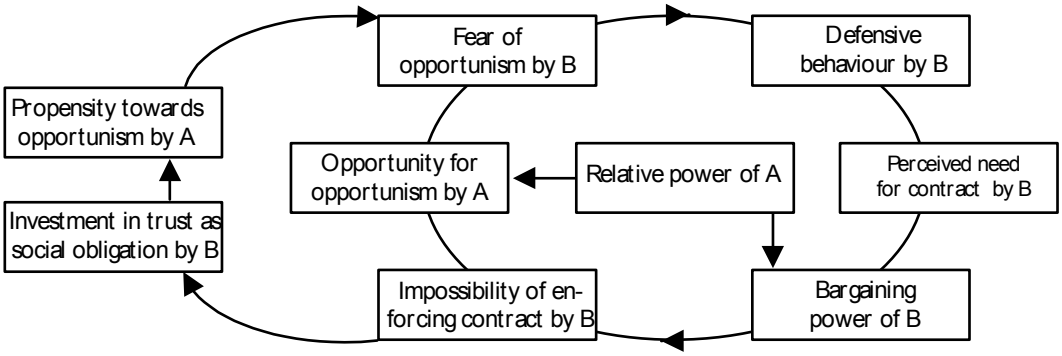


Figure 6.3: Use of social ordering to prevent opportunism.

Implications of preliminary findings on further analysis

The findings have, until now, shown a dual meaning of contract in different atmospheres. Contracts can be used to show trust and commitment but if fear of opportunism increases (or the level of trust decreases), contracts can be designed to safeguard against the perceived (and actual) risks. The relationship between trust and dependence is still unclear. The question that arises is whether trust can only positively influence a relationship in a situation of mutual dependence. If this is the case it would mean denying the importance of trust as pleaded for in recent theory because dependence, rather than trust, would explain relationship success. An additional question could be whether a contract also fulfils such a function. In this case, trust could be the mechanism stimulating openness, satisfaction, creativity and relationship continuation, whereas dependence and contract form the basic conditions on which everything is built. To examine the exact meaning and function of trust, dependence and contract in IOR development and success, a research design is made in which the exact content and meaning of contracts can be examined in different atmospheres (trusting/opportunistic). Likewise, the interrelatedness between trust and dependence is further examined by a research design that distinguishes between situations of trust/opportunism and symmetric/asymmetric dependence.

6.3 Research method

The exploratory TIMP case was used to illustrate the value of a dynamic description of IOR development. Through the analysis new insights were gained on the role of trust, contract and dependence. Because some findings contradicted earlier literature or rendered alternative explanations for earlier findings, questions arose as to the reliability of the TIMP findings. Would the same results be obtained when repeated in a study of other IORs in a technological setting? To investigate this, seven interorganisational relationships were studied. Again a longitudinal case study methodology was chosen to enable a thorough understanding of the dynamic relationships between trust, dependence and contracts. The selected cases were all IORs aimed at the development of new products and technologies. All cases involved two or more partners that are financially independent of each other. At least two partners in each relationship shared costs and benefits of technological development, making the cooperation more complex than a straight buyer-supplier relationship in which risk bearing and profit sharing are often predetermined.

The cases that were studied were classified into different situations to enable analysis of the interactions between social, private and legal ordering. In 6.2 it was argued that the meaning of contract and dependence would be different in predominantly trusting relationships than in those dominated by (fear of) opportunism. The cases were therefore selected in a way that four situations were represented (see Table 6.1):

Situation I: Mutual dependence in a trusting atmosphere, extensive or incomplete contracts.

Situation II: Asymmetric dependence in a trusting atmosphere and extensive contract.

Situation III: Mutual dependence in an opportunistic atmosphere, extensive or incomplete contracts.

Situation IV: Asymmetric dependence in an opportunistic atmosphere, extensive or incomplete contracts.

		Atmosphere	
Type of contract and dependence		Trusting	Opportunistic
Extensive contract	Asymmetric dependence		III. Special Food
	Mutual dependence	I. Chem-Venture	IV. Gauge
Contracts absent or insufficiently specified	Asymmetric dependence	II. Electro-Device	III. Green Onion
	Mutual dependence	I. New-Wrap	IV. Wrapline

Table 6.1 The cases in different atmospheres.

To enable comparison between cases and to ensure the quality of the case analysis, a case protocol was written (Yin 1995). The protocol was based on the protocol used in the TIMP case. The concepts used are derived from transaction costs economics and the process model as presented in chapter 3. The protocol is designed in such a way that the actual IOR developments can be reconstructed over time. Furthermore, the influence of the ordering mechanisms is emphasised by explicitly addressing the balance of dependence between partners (e.g. by comparing a party's contractual rights and its individual investments with those of its partner), the relationship history and the development of trust and the exact content of the contracts. The protocol is presented in Table 6.2.

Duration of the project		Project champion		Name and goal of the project	
Partners	Names	Core competencies	Number of employees	Turnover	Individual versus total investment
Third parties	Are third parties involved and what is their role?				
Relationship history	Have there been previous exchange relationship and how well has the relationship developed?				
Interest / Dependence	Economic: How is the relationship balanced?		Technological / knowledge: How is the relationship balanced?		
Contract	Which arrangements have been laid down? What function did the contract have in the relationship?				
Success	Efficiency: Was the project completed within the planned budget and set time-frame?		Technological: Are technological goals reached and e.g. patents acquired, standards set?		
Development of the relationship	Previous exchange, negotiations and commitments	Project execution and evaluation	Renegotiation, relationship continuation or termination		
Short description of relationship development as laid down in the project records with special attention to trust, contract and dependence					

Table 6.2 Protocol for case analysis.

To capture the dynamics of IOR development, and the interaction between trust and contract, a longitudinal case study methodology was chosen (Ring & Van de Ven 1994, Larsson 1992). In this way the difficulties with interpreting dynamic data with static models, as encountered by Anderson & Narus (1990) and Zaheer & Venkatraman (1995), could be prevented. The relationships were studied from the start of the project through the project end. In Table 6.3 an overview is given of the selected cases.

Case	**Number and type of partners**	**Period studied**
New-Wrap (materials technology)	Three young entrepreneurial companies, two industrial designers, one production processes engineer, who wanted to develop a new packaging material. Two supplying companies played a minor role.	March 1993 June 1996
Chem-Venture (chemicals)	Two large international companies, with activities in the chemical industry that wanted to set a technological standard. Two university professors were hired but play no role in the relationship development.	January 1993 December 1996
Electro-Device (electronics)	Two engineering companies, one independent company, one daughter company. Together they wanted to develop a new electronic device to prevent an Asian competitor taking over their market.	May 1994 January 1996
Wrapline (industry)	A fast growing entrepreneurial company and a large established production company want to develop a new wrapline for industrial use. Four supplying companies played a less central role.	March 1993 January 1996
Gauge (high precision instruments)	Two former colleagues with complementary capabilities started a joint businesses to develop a new gauge. Two additional companies played a minor role (one customer, one supplier).	July 1994 June 1997
Special Food (food industry)	Two large companies wanted to develop a new ingredient for a speciality food of one of the partners in a highly dependent situation. Knowledge institutes were consulted but did not play a role in the relationship development.	July 1990 November 1993
Green Onion (biotechnology)	One company that breeds and sells vegetables and a knowledge institute for vegetable breeding. They tried to come to an agreement on the development of an improved but did not succeed in establishing a relationship.	February 1991 March 1992

Table 6.3 A short introduction to the selected cases.

Three sources of data were used for the case analysis. First, the cases studies included a document analysis, analysing documents such as contracts, project-plans, annual reports and project reports including data on the technological progress of the project as well as financial data. Second, face-to-face interviews were held with consultants involved in the set-up and development of the projects. These interviews were conducted to confirm the findings of the documentary analysis and to investigate aspects that are hard to discover from paperwork. This included questions on the social aspects of the relationship, company culture and relationship history if these could not

be found in the documents. After the extensive case analyses were finished, the findings and analysis were again discussed with the project consultant to verify findings and validate conclusions. The cases will be discussed below, starting with the cases that took place in a predominantly trusting atmosphere.

6.4 Situation I: Mutual dependence and contracts in a trusting atmosphere

The first two cases describe the dynamics between trust, dependence and contracts in a predominantly trusting atmosphere, and in a situation where the relationships are more or less balanced. In the Chem-Venture, partners spent more than ten years building up a relationship. Although a high level of trust was established, unified governance was chosen to manage their joint project. In the New-Wrap case partners relied on trust and friendship and therefore refrained from contractual arrangements.

Chem-Venture: High trust, interdependence and extensive contracts

In January 1993 official negotiations started between two large companies that are, among other things, active in the chemical industry: Syntecs and Curex. At that time, the partners had already been talking and negotiating for ten years on an informal basis. The companies wanted to cooperate on the development of new chemical ingredient. If the development was successful it would set a new technological standard and would provide the companies with a technological leadership position in the world market. The companies are both international players and complementary by nature for this project although in other activities they were competitors. The project on chemical ingredient was initiated as a response to developments in Japan, China, India, and the USA where they were also working on setting a new standard. In November 1993, after 10 months of negotiations and a feasibility study, a contract was signed between the parties. The contract was extensive, providing clear rules on: cost sharing, project management and consultation, secrecy of information, joint ownership, duration of the cooperation, and a procedure for if the relationship would be terminated. The planned duration of the project was until July 1996.

In January 1994 the relationship was further formalised by the establishment of the 50/50 joint venture BiCom in which the formal construction of the project would be executed. In the first half of 1994, both companies mentioned start-up problems. The coordination between the companies was still unsettled and the parties had difficulties getting used to each other's ways of working. As a result the project ran into delays in the first months. At a later stage though, the project progressed well. By September 1995, already four patents had been acquired and in August 1996 the partners were looking for concrete opportunities to produce and market the jointly developed product. Even in this last stage problems were met, but the problems were jointly solved and the project successfully completed.

Analysis

Governance: The chemical industry, in which the Chem-Venture took place, is one of extreme uncertainty. The development of a new chemical ingredient is complex, expensive and knowledge is mostly codified and therefore difficult to protect. Because of the high risks associated with spill-over and opportunistic behaviour not many cooperative relationships are found in the chemical industry. In the case of Syntecs and Curex, it took ten years until the companies had developed sufficient trust to start formal negotiations for a cooperative project and the establishment of a joint venture. The choice of unified governance would also be expected from a TCE point of view. Under conditions of high uncertainty/complexity and recurrent transactions, integration of activities is expected.

Social ordering: Trust played an important role in relationship development but, in the Chem-Venture, should not be considered as an alternative safeguard. Instead, trust played an important role in the search for a good partner. In the ten years of informal negotiations, the parties also assessed other potential partners, but finally choose the partner whom they trusted most. They describe this form of trust as personal chemistry, which is in terms of this thesis is closely related to affect based trust (they even describe their joint venture as an engagement or marriage). Furthermore, after the partners had worked together for a while, and the first start-up problems were jointly solved, they developed habituation in their joint way of working. Competence trust is a basic condition for cooperation.

Private ordering: The partners in the Chem-Venture case, are both very big international companies. They were mutually dependent on each other's knowledge, financial resources and development capacity. As a result they had a high relative value to each other and had a balanced relationship. Since knowledge is openly shared only in the joint venture which is separated from the mother companies, the risks of spill-over or use of hostages are reduced.

Legal ordering: Although the partners trust in each other's goodwill and competencies, and mutual dependence stabilises the relationship, uncertainty about future contingencies, project progress, and spill-over by employees whose behaviour one cannot control remains. Alongside the formal establishment of the joint venture, therefore an extensive project specific contract was written. Because of the trusting and open relationship, the contract was relatively quick and easy to make and arrangements were complete, clearly structured and written, and reflect both safeguarding and commitment aspects.

In short, the Chem-Venture case is illustrative of a situation where trust, contract and dependence mutually complement and reinforce each other rather than substituting for each other. A high level of trust was necessary before partners would make this strong commitment to each other (they themselves compare it to a marriage!). Interdependence stabilised the relationship and decreased the opportunity for opportunism, and extensive project specific contracts guided cooperation and safeguarded against opportunism.

New-Wrap: High trust, interdependence and absence of contract

In 1992 a young industrial designer won an international designers prize for her invention: a new kind of wrapping material. Natural ingredients were used to manufacture a biodegradable packaging material that could become a good selling point for environmentally conscious companies such as The Body Shop. From 1993 onwards the industrial engineer promoted her product heavily in order to find a large distributor and a company that could produce the product. Since this effort was not very successful, she decided to develop the product herself.

She had only limited knowledge on how the product could be mass-produced and had not enough financial resources to be able to finance such a development. In 1994 she therefore started to cooperate and discuss with two business partners with whom she had built strong friendly relationships in earlier projects. One partner, a young process engineer who had recently graduated from a technical university, brought in knowledge on production processes. The second partner, an industrial designer with more experience and financial back up, bore the investment risk together with the inventor. The partners did not form a joint venture, but remained independent one-man businesses. In order to make the necessary investments they had to obtain bank loans and even had to use their personal belongings as security to make the investment possible. In June 1995, three years after the invention was introduced, the partners found a large distributor and officially started to develop the mass production of the wrapping material.

The dependence of the partners on each other, and on the success of the project, is high. Their daily and future income depends on the project's success, and the success of the project depends heavily on the complementary capabilities of the three partners. Despite this high dependence, few contractual arrangements were made. Only a letter of intention was written in which the inventor of the product and the somewhat older industrial designer committed themselves to cooperate and share costs. No arrangements were made for project management, accountability, division of gains and losses and other matters.

In 1996 the partners ran into a number of problems. To convert the invention into a product that could be mass-produced proved to be more complex than expected. These problems led to an increase in the efforts needed and the project became seriously delayed. Because of the good relationships and trust between the partners, the problems were considered to be a shared responsibility and were solved without damaging their personal relationships. In 1997 the project was successfully completed and at lower costs than expected. Furthermore, the end of the project did not terminate their cooperation. The partners continued to cooperate on new projects.

Analysis

Governance: In a situation such as the New-Wrap case, characterised by occasional transactions supported by idiosyncratic investments, trilateral governance would be expected. This is because market relief is in such instances unsatisfactory, and set-up costs of transaction specific (in this case project specific) bilateral governance structures would be too costly to be recovered from

the project. Therefore, the intermediate form of trilateral governance would be expected (Williamson 1985:75). This form of governance was however not found.

Social ordering: Trust played a very important role in the New-Wrap case. Because of previous transactions and joint development, partners had developed competence trust, goodwill trust (even bonds of friendship) and habituation. These forms of trust gave them trust in their joint ability to complete the project successfully, and made that them pay less attention to potential hazards or opportunism. Together this provided the basis from which future plans could be realised without specifying everything ex ante. Furthermore, it provided the basis for commitment, openness and joint problem solving.

Private ordering: Not only was the level of trust high, the relative value of the partners to each other was also high. Still, there was no completely symmetric dependence. The inventor and the industrial designer shared costs and benefits and were, as a result, more dependent on each other and the project's success than the process engineer. The investments by the inventor and the industrial designer were highly specific because there were no other activities or projects on which the developed knowledge could be redeployed. The process engineer is also dependent though. He had only recently started his company and was dependent on the turnover the project would generate. The resulting high mutual dependence can be interpreted as forcing the partners to bring the project to a satisfactory ending. This will have reduced their fear of opportunism.

Legal ordering: Although the investments in the project were idiosyncratic, and the project implied an occasional transaction, no clear form of governance was found and no contract was written. This lack of contractual arrangements was not complemented by third party assistance as expected from theory. Instead, the partners seemed to rely on the existing trust and loyalty between them. Although mutual dependence provided an additional safeguard, interests can change over time and do not provide a good means to jointly solve problems in a constructive atmosphere. In this case, trust therefore seems the dominant factor in explaining the success of the relationship.

In short, in the New-Wrap case, dependence is accompanied by low formalisation of the relationships. Instead of safeguarding against and limiting their dependence, the partners showed a great willingness to increase their dependence on each other. Social and private ordering ensured that the lack of legal ordering did not become problematic.

6.5 Situation II: Asymmetric dependence and contracts in a trusting atmosphere

The second situation is characterised by a high level of trust but, in contrast to the previous cases, not accompanied by a situation of mutual dependence. The Electro-Device case illustrates a situation in which partners started to work in a trusting atmosphere. When business interests broke down though, trust and loyalty did not provide a sufficient basis on which to continue the relationship.

Electro-Device: Trust, asymmetric dependence and lack of contracts

At the request of a large customer, FedMec and DevCom started a joint project to develop a new system for the electronics industry. The development was based on a new mechanism for which the large customer held a patent. The incentive for the development of a new system originated in an lower-priced article from an Asian competitor. If FedMec did not want to loose its turnover in these systems (which was also in the interest of the large customer since it partly owned FedMec), FedMec had to succeed in developing a system that was cheaper, more flexible, and that had shorter delivery times. To achieve this goal they could use the patented mechanism of the customer.

FedMec and DevCom had jointly executed projects before but these projects were always paid for and governed by outsourcing parties. In this project, substantial cooperation was required because costs (risks) and benefits are shared. The companies had relatively little experience in how such cooperation should be organised and formally arranged. As a result, they experienced difficulty in drawing up the contract and did not succeed in finding a suitable contract. Despite this, in May 1994 the joint project was started.

To enable communication and consultation on the project, an employee of DevCom was placed in the FedMec office. This also gave them the opportunity to closely monitor the project. In January 1996, a couple of months after the project should have been finished, they called in an external advisor because the project faced problems. It had become unclear whether the opportunities for commercialisation that the customer envisaged were real. Because FedMec and DevCom do not now much about commercialisation they started to doubt whether they should invest further in the project. With the external advisor, negotiations were started with the customer, but market potential remained uncertain. DevCom decided to stop the project in February 1996 and withdraw its employee from the FedMec office. FedMec regretted this decision because their future turnover depended on the success of the project and because they needed DevCom's expertise to complete the project. Furthermore, the cooperation had gone well on a technological and personal level and thus a valuable partner was seen to be lost.

Analysis

Governance: In the Electro-Device case, occasional transactions are supported by mixed investments. In such situations trilateral governance and neo-classical contracts are expected. Although the parties do consult third parties to assist when problems occur, this takes place on an ad hoc basis. The contract is insufficiently specified and many relevant arrangements are not laid down. This lack of arrangements is not structurally obviated by third party assistance.

Social ordering: FedMec and DevCom had a considerable exchange history in which both goodwill and competence trust had been developed. Furthermore, earlier cooperation had led to habituation, although they were not yet used to working together on a shared cost basis. As a result the cooperation took place in a trusting atmosphere and was technologically successful. The trusting atmosphere was broken when DevCom let its business interests prevail over loyalty.

After this incident, FedMec did no longer wanted to do business with DevCom because the loyalty and trust between the partners had been broken.

Private ordering: Although the project was started with mutual interest, the relative value of FedMec decreased when commercialisation prospects became unclear. DevCom was not dependent on FedMec nor on the possible turnover that could be realised by the system. When commercialisation became uncertain, only costs remained for DevCom. The costs of relationship termination were only the costs already invested in the project (no sanctions could be imposed because of the incomplete contract). Furthermore, the mixed investments in the relationship added to DevCom's general knowledge base that could be used in other projects. As a result there were no private ordering mechanisms that could dissuade them from breaking off the relationship.

Legal ordering: Legal ordering mechanisms were also lacking to prevent the termination of the relationship. Mutual dependence had shifted to asymmetric dependence and, because of the lack of contractual arrangements - no arrangements were made on sharing benefits, product ownership or termination of the relationship - nothing could stop DevCom from quitting the relationship apart from its feelings of loyalty or sympathy towards FedMec.

In short, the Electro-Device case illustrates that in a situation of decreasingly mutual dependence, trust and contract acquire a different meaning. Whereas, at the start of the project, a lack of contractual arrangements was not considered problematic because of reliance on trust and earlier experiences, in a later stage this became very problematic. It might be concluded that trust is a valuable mechanism in creating an atmosphere in which technological cooperation can flourish (the project execution was very successful!) but that it is of limited value in safeguarding the relationship.

6.6 Situation III: Asymmetric dependence and contracts in an opportunistic atmosphere

After the description of the examples in a trusting atmosphere, this section outlines two cases in which fear of opportunism is more clearly present, or in which trust is gradually breaking down. In these situations, contracts and dependence are expected to have a different meaning for the participants in the cooperation. Especially in these cases, in which partners experience asymmetric dependence, they are expected to emphasis contracts in order to protect their own interests. As discussed in 6.2.2., though, their bargaining power to enforce (fair) contracts and the meaning and effect of loyalty or trusting norms of behaviour, may be limited. This will especially be the case if the more powerful party has an opportunistic attitude and wants to leave as much as possible unformalised so as to have an escape-route ready when other, more attractive opportunities arise. In the Special Food case, such a situation led to a desperate struggle by the dependent company to enforce the contract. In the Green Onion case no cooperation was established because no contractual agreement could be reached.

Special Food: Asymmetric dependence and the failure of contract

In December 1989 FoodCom (a large producer and seller of speciality foods) and Processor (an international firm specialised in developing a wide range of products and processes) decided to develop a new ingredient for a speciality food. Processor was much larger than FoodCom and held a strong position because of its extensive knowledge base. The cooperation between the partners was based on an earlier cooperation on the development of Special Food from 1987 onwards in a European project.

For FoodCom the development of the new ingredient was very important because it would determine their competitive position in the years to come. They invested a large amount of money in the project. For Processor the project was of less importance because, for them, it included more or less standard knowledge and routines and the investment in the project formed only a small part of their total R&D expenditure. The contract strongly reflected this unbalance in interests. The contract was extensive, but strongly in favour of Processor's interests. Whereas the contract stated that FoodCom had to invest more money and resources than Processor, Processor got the property rights (patent rights on product and method, licensing rights). FoodCom did not have a strong bargaining position because of its strong dependence on Processor's technological knowledge. As a result FoodCom has to agree to an 'unfair' contract. The only contractual arrangement that was included for the protection of FoodCom's interests was an agreement that Processor would help them with the introduction of the ingredient into the production process of the speciality food.

Because of their limited knowledge FoodCom ran into both technical and managerial problems. First they experienced technological problems with implementing Processor's ingredient into FoodCom's production process. They tried to call upon the norms of cooperation and in the last resort tried to use the contract to force Processor to help them. Processor was, by that time, involved in various other projects that had higher priority and did not respond to the requests and threats of FoodCom. Instead they simply stopped providing inputs to the project half a year before the planned project end. FoodCom was not able to influence Processor's behaviour because of their high dependence and Processor's awareness of this.

Secondly, because of their limited knowledge, FoodCom experienced managerial problems because they had no basis on which they could monitor the execution of the project by Processor. They did not know what to expect, nor could they adequately judge the quality and applicability of the results. As a result the relationship terminated as soon as the Special Food ingredient was delivered and FoodCom had found a way to process it without the help of Processor. FoodCom had experienced a high level of conflict and was no longer willing to cooperate with Processor.

Analysis

Governance: Because the project implied an occasional transaction and the investments in the project were specific (only for FoodCom), trilateral governance and neo-classical contract would

be expected. Instead, an unfair contract was found in which no safeguards were provided and in which no arrangements were made for third party assistance.

Social ordering: Although the project builds on earlier cooperation, no mention was made of the establishment of goodwill or competence trust. The incentive for the cooperation should purely be seen in the necessity of FoodCom to involve Processor in the development of a new ingredient. When problems occur, no norms of loyalty or obligation can be called upon.

Private ordering: Besides a lack of social norms guiding the relationship, there is also a strong unbalance in the relationship. Whereas FoodCom's interest in the project is of strategic importance, Processor is only interested in the property rights of the developed ingredient. Further, the development has limited priority in comparison to other, more important projects. Furthermore, the investments made by Processor are not specific and thus dependence is created. FoodCom is not able to use private ordering mechanisms to prevent opportunistic behaviour. Knowledge is in the hands of Processor and thus hostages cannot be created. Alternative partners are not easy to find and a partner change would mean high switching costs because property rights and knowledge remain at Processor (they would have to start from scratch again).

Legal ordering: Although the contract is extensive, it lacks arrangements that can safeguard the risks associated with the high dependence of FoodCom. The interests of FoodCom are not well met by the contract, safeguards are not installed, and third party assistance is not envisaged. Furthermore, monitoring is only possible to a very limited extent which results in a situation where the contract is of little value. The only function of the contract is the protection of property rights for Processor, and has no value to FoodCom, or for the preservation of the relationship.

In short, the case illustrates that contracts do not function well without the support of mutual dependence and trust. The extensive contract did not protect FoodCom against the opportunistic use of asymmetric dependence, and there were no bonds of friendship or loyalty that could change Processor's propensity towards opportunism. The most important conclusion though is that the case illustrates that the true relationship between the partners could have been be recognised in the way the contract was written. In this case the contract clearly reflected the dependence of FoodCom and, as such, the contract could be perceived as mirroring the true relationship.

Green Onion: No cooperation without an extensive contract

In 1990 a start was made on a project aimed at the conservation of onions on the basis of biotechnology. To be able to develop a new method for conservation, Vege-House (a breeding station and vegetable trading company) searched for a knowledge institute with whom the project could be jointly executed. In the field of plant upgrading, there are only a limited number of institutes (in the Netherlands) that could supply the required level of knowledge and technology. Vege-House contacted Genetic, a knowledge centre and breeding station specialising in the genetic manipulation of vegetables. They started negotiations on the project in 1990 but in February 1991 serious problems arose that hindered the partners in coming to an agreement.

The Green Onion project was very important to Vege-House. It would be their first introduction into the field of biotechnology, which could possibly be very important for them in the future. Furthermore, with the improved onion they could strengthen their market position and obtain a technological lead over their competitors. Therefore they wanted to be certain of the confidentiality of the project and wanted Genetic to sign an extensive contract with the emphasis on secrecy of information, even after the project was completed.

For Genetic the project was of less importance. They only wanted to cooperate if the developed knowledge could be used in other projects and they were not inclined to compromise with Vege-House. Because the personal relationship between the partners was also difficult, Vege-House decided to involve an independent third party to assist in negotiations. After intensive and difficult negotiations, the parties still could not come to an agreement though. Because spill-over of knowledge could imply the loss of competitive advantage for Vege-House, secrecy of information was an absolute must. Genetic was not willing to adhere to this wish. They could also not reach agreement on exclusive use of know-how, royalty arrangements and minimum project outcomes. Genetic simply did not want to give any guarantees on the results of the project, and did not want to lose any rights on the developed knowledge. The only right they wanted to allow Vege-House was the right of first refusal. This is the right to obtain (buy) the ownership of methods and know-how. This would enable Vege-House to further develop the technology. Vege-House was not interested in this right because they did not yet have any experience in biotechnology applications and would hence not be able to further develop the project independently. Because Vege-House did not succeed in creating desirable conditions for cooperation, they stopped negotiations with Genetic in March 1992 and looked for an alternative partner.

Analysis

Governance: In a situation where idiosyncratic investments are made on an occasional basis, and the fear of opportunism is high because of a high risk of spill-over, unified governance would be expected to govern such transactions. In the Vege-House case this could have been realised in a temporary joint venture. Quite understandably, this did not occur in practice because partners had no previous knowledge of each other, the interests of Genetic were limited, and it was Vege-House's first introduction to biotechnology. A relational contract with joint ownership of property rights and adequate safeguards would have been a solution, but this solution was not reached.

Social ordering: Since the Green Onion project did not build on previous exchange relationships, and the project was the first introduction to biotechnology, no competence trust or habituation had yet been developed. Furthermore, goodwill trust could not be developed as the personal relationships did not develop well. As a result, personal bonds of loyalty and norms of social obligation did not play a role in the reduction of opportunistic behaviour, or in the ease in which agreements could be reached.

Private ordering: Besides a lack of trusting personal relationships, the potential relationship was also characterised by asymmetrical dependence. Vege-House was dependent on Genetic's

technological knowledge to be able to execute the project. The dependence did not imply lock-in though. No dependence had yet been created due to project-specific investments and there were still three, highly qualified, alternative partners to turn to. Furthermore, switching costs were still relatively low (the costs of more than one year of negotiations). As a result Vege-House decided to terminate the relationship with Genetic and start negotiations with another potential partner.

Legal ordering: Because the knowledge that would be developed in the project represented great strategic value to Vege-House, and this knowledge could only with difficulty be protected because of its tangible nature, protection of this knowledge was of foremost importance to Vege-House. They wanted to establish an extensive contract that would safeguard against all risks varying from unwanted knowledge transfer to relationship break down, and provide rules of behaviour for after the project was completed. When such an agreement could not be reached, third party assistance was sought to help the parties reach an agreement. However, this did not change the attitudes of Genetic and Vege-House decided that the risks were too high and hence stopped the negotiations.

In short, the Green Onion case illustrates that in a situation where trust is not (yet) present and interests are not balanced, contracts become very important for safeguarding the project and the relationship. Because of the unbalance between partners though, the contract might be hard to negotiate. In the Green Onion case, negotiations were stopped when an agreement could not be reached, and a relationship was not established.

6.7 Situation IV: Interdependence and contracts in an opportunistic atmosphere

The final situation that will be illustrated is that in which partners are mutually dependent in an atmosphere in which the partners fear opportunistic behaviour and/or spill-over, or in which opportunistic behaviour is shown. In such an atmosphere the meaning and function of contract and dependence will be explored. In the Gauge case, eroding trust and a slow break down of mutual interests led the less dependent partner to pursue only its own self-interest in a way destroyed their jointly owned company. In the Wrapline case, a fast moving opportunistic entrepreneur made clever use of the ignorance of its larger partner.

Gauge: Decreasing trust and interdependence, and the absence of contract

In August 1994 a new company, TechCom, was founded by two former colleagues. One of them has strong managerial skills (the Manager) and the other strong technical skills (the Technician). Besides TechCom, the Manager and Technician also started-up their own, one-man businesses. The Technician started Electro, an electrical contractor, and the Manager was involved in various small businesses together with his brother. This indicates that although they owned a joint company they were also, to a large extent, independent entrepreneurs with their own interests. TechCom was predominantly founded to make their joint invention viable: the development of a new density gauge. Their aim was to develop a better gauge than those available on the market and at lower costs. They had a large potential customer and so had enough faith in the project to make a start in October 1994.

Although the interests in the project were considerable (the personal income and businesses of the entrepreneurs depend on it) the contract was not well specified. No arrangements were made about tasks, responsibilities, ownership of method/product/patents, nor on secrecy of information. Despite this the project made a good start. However, in March 1995, the first problems occurred in prototyping and adaptations had to be made. As a result the required investments increased. Towards the end of that year the project had new technical problems and the planning was again prolonged. The Technician perceived the technical problems to be part of the normal disappointments that occur in every innovation trajectory. To overcome these problems, and make the project a success, the Technician wanted to invest extra time and money in the project ('in for a penny, in for a pound'). However, the Manager started to doubt the Technician's technical problem solving capabilities and perceived the problems as a warning of complete failure of the project. He therefore refused to make additional investments in the project ('a fault confessed is half redressed'). Instead, he increased his activities in the small trading companies that he ran together with his brother as these companies gave him the short-term profits he was looking for. This disloyal behaviour evoked doubts by the Technician on the intentions and goodwill of the Manager. As a result the relationship between the entrepreneurs becomes seriously damaged and, in 1996, the Manager let his partner know that he wanted to be bought out of TechCom. At this point, therefore, the value of the developed knowledge had to be determined and this was very difficult. Both partners took a defensive stand and no agreement was reached. Also a third party that had been brought in as a last resort could not solve these constructively. The entrepreneurs only defended their own interests and started to look for new partners and opportunities without acknowledging each other. Because of the repetitive negative behaviour the quarrel took on such proportions that operations were seriously hindered and capital resources dried out. Neither the Manager nor the Technician were willing to pay wages to the employees or invest in the project because this might benefit the other's interests. As a result, employees were sent home and TechCom died an unexpected death. In June 1997 the official bankruptcy of TechCom was confirmed and the project terminated.

Analysis

Governance: Because investments in the project were idiosyncratic to both parties, and the parties wanted to engage in recurrent transactions, unified governance supported by relational contracts was to be expected. The advantage in the integration of activities is that adaptations in the project can be made without the need to consult, complete, or revise interfirm agreements (Williamson 1985:78). The establishment of a joint company meets this expectation. Joint property furthermore warrants joint interests, and reduces the risk of opportunistic behaviour and spill-over.

Social ordering: Although the partners had a successful exchange history, the establishment of a joint company and execution of a jointly financed project, imposed other requirements on their relationship. At the start the partners had a high level of competence and goodwill trust. Both deteriorated though, when technical problems persisted (competence trust) and self-interest was placed over joint obligations (goodwill trust).

Private ordering: Although the partners started in a situation of mutual dependence, the dependence became increasingly asymmetric as the Manager developed alternative business opportunities and perceived the technical success of their joint project to be increasingly uncertain. In this way his relative dependence and his interest in sustaining the relationship were decreased.

Legal ordering: In the stage of relationship development when trust had been broken and mutual dependence was no longer the case, the importance of legal ordering became apparent. Since no project specific contract had been made, the entrepreneurs had nothing to fall back upon to determine the price of developed knowledge, to enforce investments in the project, or to involve third parties for arbitration. The joint ownership of TechCom did prevent the Manager just walking away. However, it could not guarantee an atmosphere in which problems could be jointly solved and the relationship could become a success. Instead, problems had to solved in a highly opportunistic and volatile atmosphere governed by self-interest interests seeking, hiding information, defensive behaviour and cheating. In such an atmosphere no solution could be reached leading to a negative outcome for both partners.

In short, the Gauge case shows that, over time, relationships can change from promising trusting relationships into battlefields without winners. Whereas unified governance should guarantee joint interests, this is no longer the case when alternative opportunities decrease the relative value given to joint activities. Unified governance could not finally prevent the Manager behaving opportunistically. Neither was the trust and loyalty strong enough to balance self-interest.

The Wrapline case: The independent entrepreneur and the failure of contract

In the Wrapline case, a small entrepreneurial company (Entrepreneur) and a large production company (Producer) wanted to develop a packaging machine (the Wrapline). Entrepreneur is a highly specialised company in process development and has a number of world-wide patents. It is an aggressive, fast growing company. Producer is specialised in the production of machinery and tools. It is a subsidiary of an old and traditional large company that has a dominant position in the industry. Its age can be recognised in the bureaucratic and hierarchical manner in which it does business. Entrepreneur and Producer have previously cooperated on a co-makership basis.

Because of the powerful position that Producer had traditionally held, it did not fear opportunism when it negotiated a contract with Entrepreneur. Without much thought, a standard buyer-supplier agreement was used that did not include arrangements for shared investments and shared benefits from the cooperation. Entrepreneur did not place much emphasis on the contract either. It did not want to be tied down by long-term contractual arrangements. Entrepreneur wanted to be able to quickly respond to changing circumstances and arising opportunities to make further company growth possible.

In November 1993 the project started. Entrepreneur had significant economic interest in the project since large, international, producers had shown interest in the Wrapline. This was a large market potential for Entrepreneur. For Producer, the project was more of an operational nature; it performed tasks in the way Entrepreneur directed them to. The cooperative nature lies

in the fact that risks and benefits are shared. Initially Producer paid the project costs. If the project was successful, Entrepreneur would pay these costs, and future production assignments would be given to Producer.

In 1994 the first feasibility studies were conducted and a prototype made. The first patent was also applied for. However, the cooperation did not develop as desired. Entrepreneur continuously changed the specifications for the machine as insights grew on technical and commercial requirements. Producer could not timely adapt its production capacity because of its bureaucratic culture and because the project did not have the same priority as it did for Entrepreneur. It was difficult for the companies to openly discuss these problems, let alone solve them. The large cultural differences made it hard for them to understand and sympathise with each other. Instead of working it out together, Entrepreneur started to search for another partner. In October 1995 the cooperation between Entrepreneur and Producer terminated. The losses for Producer were moderate relative to its size and it showed understanding of the problems that Entrepreneur had with its bureaucracy. Producer is aware of its inability to move as fast as the small entrepreneurial firm and did not apply sanctions on Entrepreneur as it sought another partner.

Analysis

Governance: In a situation as described in the Wrapline case, where investment characteristics are mixed and recurrent transactions are expected (first development, later production), bilateral governance is expected, supported by a relational contract. The relational contract would have to be adjustable and flexible with terms in which both parties could have confidence. To reach agreement on goals, ways of achieving them *and* conditions in which the agreement may be changed is a difficult and time-consuming process. Hence, bilateral governance would involve high set-up costs for the relationship, which could however be recovered from recurrent transactions (Williamson 1985: 75-77).

Social ordering: The project did not build on a previous exchange history, hence no competence trust or habituation had been established. The large cultural differences between the parties and the opportunistic attitude of Entrepreneur (in a self-interested, opportunity seeking meaning of the word) hindered the development of goodwill trust and hence this did not yet provide a basis for loyalty or norms of obligation.

Private ordering: The investments in the project are of a mixed nature. Most of the developed knowledge can also be used in other projects. The parties also do not represent unique value to each other. Alternative partners exist, and hence dependence is mutual but limited. If the relationship had developed further, specific investments could have been higher if the wrapline had reached its production phase. This phase of cooperation was never reached. Instead, cultural differences, and adaptation problems, led to doubts concerning matching competencies. Alternative partners were sought to enable relationship termination.

Legal ordering: In the starting phase of the cooperation, neither partner placed much emphasis on the contract completeness. As a result a standard buyer-supplier contract was used without paying special attention to joint investments, gains and contract adaptations. This

contract did not protect Producer from the opportunistic behaviour of Entrepreneur. Because the dependence of Producer was limited, it accepted a loss and did not impose sanctions.

In short, the Wrapline case illustrates how cultural differences can hinder the development of a relationship. Relationship build-up was stopped before mutual dependence had strongly been established. Entrepreneur's entrepreneurial attitudes led to a higher priority being placed on new business opportunities rather than on loyalty and long lasting relationships. Although no *intentional* harm (no self-interest seeking with guile) was done to its partner, Entrepreneur did not refrain from opportunism if the growth and flexibility of the company benefited. Because of its superior technological know-how, and its possession of patents, the company was not dependent on Producer, and was a very attractive partner for other companies. Entrepreneur therefore searches for short-term relationships that help the company a little further, and then moves on to the next challenge. For Entrepreneur, it is important not to be tied down by extensive contractual arrangements that could hinder this flexibility.

6.8 Contract and dependence in different IOR atmospheres

From the seven cases in predominantly trusting or opportunistic atmospheres, preliminary conclusions can be drawn on the function and meaning of trust, dependence and contracts in different atmospheres. The first observation is that the relationship between trust and contract is not as 'straightforward' as suggested in some of the papers discussed in chapter 2. The absence of contracts does not automatically mean that the presence of trust substitutes for it (c.f. Anderson & Narus 1990, Zaheer & Venkatraman 1995). Nor does the presence of an extensive contract automatically indicate the absence of trust, or even distrust between partners (Bradach & Eccles 1989, Nooteboom 1996). Instead, complex dynamic relationships are found between trust, dependence and contract. A short summary of the cases is presented in Table 6.4. Emphasis is again placed on the fact that the cases do not present either/or situations when classified as taking place in a trusting or opportunistic atmosphere. Trust and (fear of) opportunism can often both be found in a case, dependencies shift over time, and contracts have different functions as a relationship progresses. As a result the classification of cases is not meant to be definitive but illustrative of what relationships can be found under different circumstances.

The picture that emerges is that a relationship always starts in a certain atmosphere as a result of previous cooperation, ex ante knowledge about partners or organisational culture. The atmosphere can vary from a trusting atmosphere to an opportunistic atmosphere. If trust is already established in the relationship, partners will doubt less the other's intentions and capabilities and will therefore be willing to commit to the relationship, provided that joint interests exist. If trust has not yet been established, partners can still be willing to enter a relationship because of joint interests or dependence on the other's knowledge or capabilities. Even in an atmosphere where opportunism is feared or where one of the partner behaves opportunistically, relationships can be established. In such situation, dependence or insufficient information can lead partners to cooperate, although commitment in such a situation will be lower and contracts will have another meaning.

Case	Contract & dependence	Development of trust/ opportunism	Relationship outcome
Chem-Venture Situation I	Extensive contracts/ unified governance in joint venture	Trust pushes the partners over the threshold to cooperation, later it serves as the basis on which problems (start-up, technological problems) are jointly solved.	Cooperation takes place with a long-term perspective and is highly successful. Technical and other problems can be openly discussed and solved.
New-Wrap Situation I	Hardly any use of contract, strong interdependence.	Relationship starts in a trusting atmosphere and trust intensifies by mutual care and joint problem solving.	Technical problems in the project are jointly solved and relationship continues with mutual benefit.
Electro-Device Situation II	No extensive contract because of inexperience, low dependence when commercial perspective is finished.	Although the relationship is based on trust, joint problem solving and previous experience, this does not provide enough incentive to continue the relationship when the commercial perspective is no longer present.	The relationship is terminated, although the relationship quality was good. The dependence was low, contractual agreements absent and the room for opportunism was large.
Special Food Situation III	Extensive contract in which property rights, licensing agreements, investments, benefits and project plan are laid down, started with asymmetric dependence.	Relationship starts unbalanced. Processor dictates the contract. When FoodCom want to use the contract to safeguard its interest, it is unsuccessful due to its dependence/captivity.	Cooperation is terminated and FoodCom experiences a high level of conflict. In a later stage, FoodCom involuntary continues its cooperation with Processor because it has no alternative partners to turn to.
Green Onion Situation III	Do not succeed in establishing a contract	Relationship starts in a neutral atmosphere, but because there is asymmetric dependence and a trust relationship cannot be built, no agreement can be reached. Genetic is only after its own interests and is not willing to compromise.	The relationship is broken off in the negotiation phase.
Gauge Situation IV	Hardly any use of contract, relationship develops from interdependence to asymmetric dependence.	Relationship starts in a trusting atmosphere. Trust erodes as doubt grows on the Technician's capabilities and the Manager's intentions. As a result individual goals start to dominate joint interests.	Cooperation is terminated. The Technician suffers severe losses because the project is terminated and TechCom goes bankrupt.
Wrapline Situation IV	Use of a standard buyer-supplier contract without adjusting it to shared costs and benefits.	Relationship starts in a neutral atmosphere. Producer is not very committed. Entrepreneur is interested as long as individual benefits can be obtained. When interests shift during the process Entrepreneur finds another	Cooperation is terminated without much trouble because of low interest Producer and opportunistic behaviour of Entrepreneur. No future cooperation.

Case	Contract & dependence	Development of trust/ opportunism	Relationship outcome
		partner.	

Table 6.4 Summary of the cases.

Since it is not easy to start a relationship in an opportunistic atmosphere, most IORs will start in a trusting or neutral atmosphere. A neutral atmosphere can be found when partners do not yet know each other and when trust and opportunism are not yet present as in the Wrapline case. An opportunistic atmosphere can evolve out of a neutral or trusting relationship when one or more partners show repetitive negative behaviour. as in the Gauge case. If we hence consider IOR development as a process in which positive and negative behaviour can change the relationship atmosphere, the formulation and signing of a contract should also be seen as a step in this development. Contracts can, just like trust and changing dependencies, be seen as a both cause and the result of cooperation.

In this understanding, contract negotiations can be interpreted as a process of getting to know and understand each other and the signing of the contract can be seen as a sign of commitment as in the TIMP case. If fear of opportunism plays a more central role though, contract negotiations can resemble a battlefield where the most powerful partner dominates contract content and execution. In such situation unfair sharing of costs and benefits might be recognised in the contract as in the Special Food case. Both the negotiation process and the signing of the contract will, by the more dependent partner, be interpreted as negative behaviour and as a result increase defensive behaviour and lower trust. In the Green Onion case this led partners to refrain from cooperation.

Most relationships do not show an either/or function of trust and contract though. Most times contracts will have different meanings in different phases of relationship development. At the start of a relationship a contract might be a sign of trust and commitment. As the project moves into its execution phase, the contract might be used as a project plan and may be called upon when uncertainty exists about the execution process. When the project is in its final phase, the contract might be used to look at the way in which benefits are to be shared. In case of conflict or relationship termination, the contract might either be used to call in, or function as, a neutral third party. In the last resort the contract might be used to take the case to court. To enable these functions, arrangements should be made ex ante. Most contracts will show a mixture of the different type of arrangements, with all their different meanings.

Just as fear of opportunism can stop parties entering a relationship, asymmetric dependence can also be a reason for not engaging in a relationship if credible guarantees against opportunistic behaviour cannot be given as in the Green Onion case. Because of asymmetric dependence, the more powerful partner will have more opportunity for opportunism, thereby increasing the perception of risk by the more dependent partner. As a result it might be better not to engage in such a relationship. If partners do establish a relationship because of the perception that no other partners are available, contract negotiations, and the establishment of trust, will be difficult. It is only in a more or less balanced relationship that social values can play their stimulating role on openness, joint problem solving and loyalty to the relationship.

In short, the start of a relationship usually takes place in a trusting or neutral atmosphere. As a result of mutual positive behaviour (e.g. friendly negotiations, strong commitment, joint problem solving) the basis for cooperative, trusting behaviour is strengthened and the relationship shifts towards a more trusting atmosphere. The arrows in Figure 6.4 can be seen as a projection of the dynamic development of the relationships as described (the Green Onion case is not included because the relationship was not established). A trusting atmosphere will not easily be reached if partners have had negative previous experiences with each other (or one has an opportunistic reputation). If a relationship is started in an atmosphere where a strong fear of opportunism is present, it will take a disproportionately amount of positive behaviour to break away from a distrusting atmosphere into a trusting one. A distrusting atmosphere does not necessarily result from personal experience. In the Chem-Venture case it was shown that industry characteristics (tangible knowledge of strategic importance which is difficult to protect) can also create an atmosphere in which it takes considerable time to build up a neutral to trusting atmosphere in which relationships can be started.

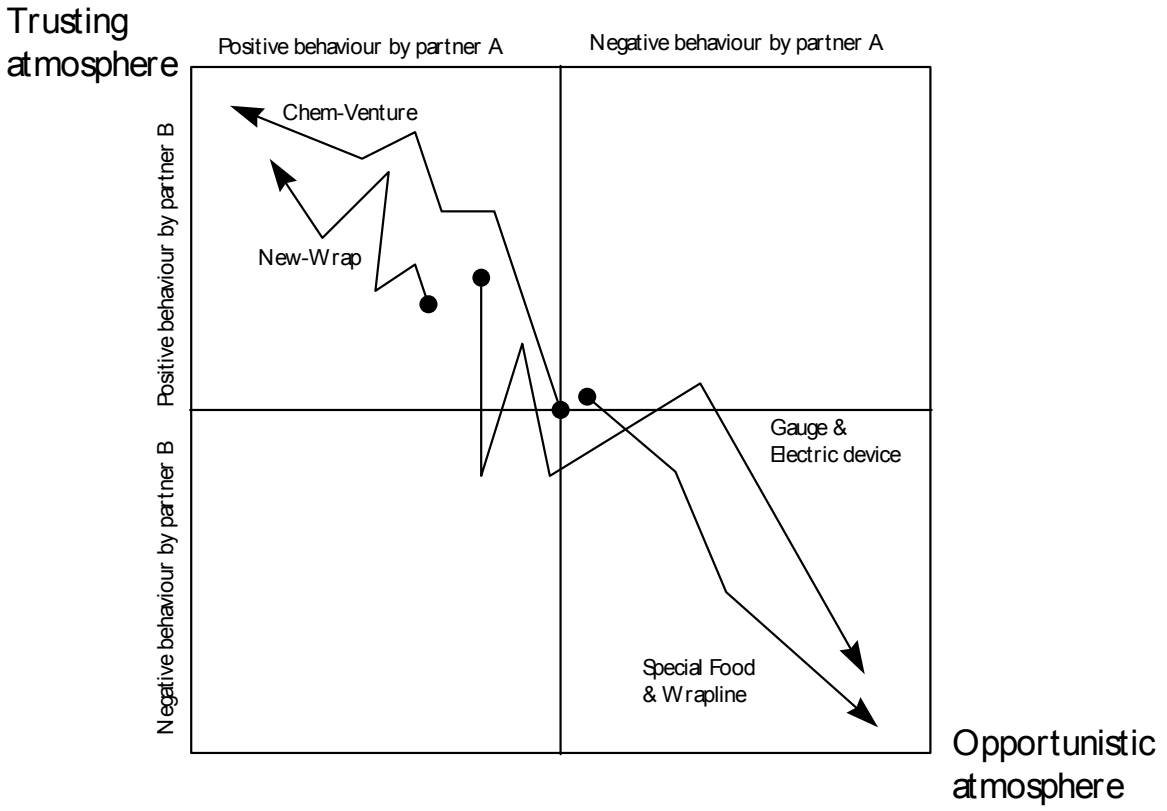


Figure 6.4 Representation of the dynamic development of the studied cases.

Unfortunately, it works much easier the other way around. If partners start in a trusting atmosphere and one (or more) of the partners shows negative behaviour (e.g. breaking promises, withholding information) trust will deteriorate quickly. In the first instance, trusting partners will give each other the benefit of the doubt and try to solve problems together. However, when

doubts increase on the other's intentions, as in the Gauge case, trust deteriorates very fast and it is hard, if not impossible, to regain it.

The meaning and function of trust in IOR development

From the cases it could be concluded that trust can play a very important role. Previous experience, competence and goodwill trust enabled parties to engage in a relationship (Gauge) and increase dependence on each other (Chem-Venture) or to refrain from extensive contracting (New-Wrap). In the further development of a relationship, friendly relationships characterised by affect based trust stimulated joint problem solving (Chem-Venture, New-Wrap) and the technological success of the project (Electro-Device). Trust is fragile in cases where dependence is, or becomes increasingly, asymmetric. In such situations individual business interests prevail over bonds of friendship and loyalty (Gauge, Wrapline). In these cases self-interested behaviour first deteriorated the basis of trust and later led to relationship termination. In short, trust and mutual dependence go hand-in-hand, whereas asymmetric dependence seems to be accompanied by difficulties in building trust, and fear (or occurrence) of opportunistic behaviour.

The meaning and function of dependence in IOR development

Dependence also played an important role in relationship development. Like trust, dependence plays a large role in relationship establishment and continuation. In a technological setting, many relationships evolve because complementary technological knowledge is needed. For many projects only a few partner companies qualify because of the highly specialised nature of the projects (e.g. Green Onion, Chem-Venture). In other cases, dependence originates from a perceived business opportunity that can only be exploited with help of an external partner (e.g. New-Wrap, Gauge, Electro-Device). It is rather uncertain whether dependence is also strongly based on transaction specific investments. Although specific investments are made in the project, it will not always be certain whether the outcomes could be used in other projects or relationships. This uncertainty is caused by the uncertain and complex nature of the innovation trajectory. In TIMP the partners did not consider investments to be specific because they considered learning (general technological and managerial learning) as one of the major benefits, and these general lessons could always be applied in other situations. In the cases presented here, dependence on technological knowledge formed the major source of dependence. The only situation in which investments in the development of knowledge are without doubt transaction specific is that in which property rights exist that protect the transfer and use of knowledge.

In the cases studied, mutual dependence (or balanced relative values) was found to be of great importance to the success of the relationship. In cases characterised by asymmetric dependence, the building of trust proved to be difficult (Special Food, Green Onion). As a result, interactions were dominated by fear of opportunism and defensive behaviour, and no commitments were made to the relationship that could alter asymmetric dependence. Also difficulties arose in the drawing up of contracts. Dependence led to a weak bargaining base for the more dependent party which could result in an absence of, insufficiently specified, or unfair

contracts (Special Food). As a result parties may refrain from cooperation (Vege-House). If a relationship is established, unwanted relationship termination is a possibility in situations where contracts are absent or insufficiently specified (Gauge, Electro-Device).

To change the balance of a relationship in order to increase one's bargaining position, opening up the possibility of trust development or increasing mutual commitment, different mechanisms could be used. In the cases studied only one option was recognised, that of searching for alternative partners or business opportunities (Wrapline, Gauge). In this way partners decreased their dependence (their partner's relative value) and increased their opportunity for opportunism. However, these are examples of relationships that started in a situation of mutual dependence. With asymmetric dependence attempts are made to use the contract to prevent partners from behaving opportunistically. Maybe this can be explained by the fact that partners saw no alternatives to their current partner and hence did not search for alternatives (Special Food). Hesitance to turn to alternative partners might also be caused by one-sided loyalty (Gauge). An additional explanation might be that goodwill trust was broken and new investments, to increase one's own value, must be supported by a belief in the partner's intentions that a more balanced situation will lead to improved cooperation. In the cases studied no information could be found on the actual or potential use of hostages.

The meaning and function of contract in IOR development

In most cases trilateral governance was expected supported by neo-classical contracts. This was not often found. Rather unclear governance structures were found. In situations requiring trilateral governance (e.g. Green Onion, Electro-Device, Special Food, New-Wrap), third parties were not involved or were called upon too late and on an ad hoc basis. A structural arrangement for the involvement of third parties was lacking. As a result the assistance of third parties was not very successful in the presented cases. In many cases though, third party involvement could probably have had a positive influence if structurally used.

In situations where unified governance was expected (Chem-Venture, Gauge) it was found. In both situations, integration of activities followed a long period of trust building or successful earlier cooperation. In both instances, integration of activities also led to considerable start-up problems. In the Gauge case these problems led to deterioration of competence and goodwill trust and finally to a breakdown in the relationship.

Bilateral governance was only expected in the Wrapline case. Instead of a well-negotiated contract, including arrangements for relationship adaptation, an insufficiently specified contract resulted out of limited interest by Producer and an opportunistic attitude by Entrepreneur. The question is whether a well-negotiated contract would have prevented the relationship breaking down since relationship success was hindered by strongly differing company cultures and attitudes. A more thorough contract negotiation process could have prevented the partners from engaging in cooperation.

The generally observed absence of the expected form of governance with its supporting contractual structure can indicate various things. First, parties may just not have known the best way to manage and formalise their relationship because of their limited experience with intensive

interfirm cooperation. Especially in the cases where only small (and recently started) firms were involved this might have been a problem. Secondly, the findings can be interpreted as an indication that contracts cannot be drawn up without a certain level of trust between partners. In the cases where trust was (increasingly) absent, partners experienced difficulties in defining joint goals and ways of achieving them. As a result it was difficult to reach agreement and to write this down in an extensive contract. Hence contracts were absent, insufficiently specified, or very unclear and unstructured. When contracts were drawn up in a trusting atmosphere, the contracts were often better specified concerning goals and the ways of achieving them. These contracts were not primarily written as safeguards for opportunism, but rather served as a sort of project plan guiding project execution. Thirdly, the absence of the expected governance structure might indicate that parties relied on other forms of governance than legal ordering. For example in the New-Wrap case partners might have relied to a great extent on their mutual dependence.

With regard to the ordering mechanisms trust and contract, the findings suggest that contracts, although often described as mechanisms for non-trust situations, cannot be drawn up without trust being present. Without trust, partners experienced difficulties in defining joint goals and ways of achieving them and hence the writing of a contract was difficult. As a result contracts were absent or insufficiently specified. Also very unclear and badly structured contracts were found that sufficed in persuading partners to cooperate but were worthless as soon as problems occurred. When contracts were drawn up in a trusting atmosphere, the contracts were often better defined and highly specified concerning goals of cooperation and manners for achieving them. These contracts were not primarily written as safeguards against opportunism, but rather guided and governed project execution. As a result, two types of contracts may be distinguished:

A. *Contracts reflecting trust and commitment to the relationship:* This is very much an ex ante function of contract. The writing of the contract can be considered analogous to the process of relationship development as project goals become clear, investments and gains are negotiated, and methods of project execution are laid down. These contracts will predominantly include rules on project goals and execution.
B. *Contracts aimed at preventing opportunism and protecting property:* These contracts are much more focused on the possible termination of the relationship and the prevention of spill-over and property rights. It reflects the ex post function of contracts, or the function of contracts in cases where things can go wrong (uncertainty, opportunism). These contracts will predominantly include arrangements for property and patent rights, conflict resolution and relationship termination.

The two functions of contract are not mutually exclusive, rather they may very well complement each other. In the cases of TIMP and Chem-Venture, the contracts between the companies first had the function of showing commitment to their relationships. Later, the project specific contracts, provided both rules for execution of the project (contract A) and had to serve as a safeguard against spill-over and opportunism (contract B). In general it might be expected, that contracts tending more towards option A will reflect more trusting relationships whereas contracts that lean more towards contract B arrangements, reflect lower trust relationships.

In the document analysis, not much was found on the function of monitoring in the relationships. Only in two cases could monitoring functions be recognised. In the Special Food case monitoring was very difficult because of FoodCom's lack of specialist knowledge and asymmetric dependence. In the Electro-Device case, monitoring was guaranteed by placing a employee of DevCom in the office of FedMec. It is not possible to draw any conclusions based on this limited knowledge.

6.9 Conclusion: Theory and practice leading to testable hypotheses

In this last final subsection the findings from chapters 5 and 6 are confronted with the earlier expectations as formulated in the propositions. Based on this confrontation the propositions will be rewritten into hypotheses that will be tested in chapter 7. To get a clear overview the propositions are first ordered according to the ordering mechanism to which they most relate. First the propositions on trust are discussed and after this, those on contract, dependence and on the interrelatedness of trust, contract and dependence.

Conclusions and consequent hypotheses on trust

The first set of propositions is related to the content and function of trust in IOR development and success (propositions 2, 3 and 7). The propositions were based on the theoretical insights discussed in chapters 2 and 3 and examined in the cases contained in chapters 4, 5 and 6. The confrontation between the theoretical expectations and empirical findings will now be used to derive testable hypotheses.

Propositions

The argument on trust started with recognising different forms of trust. Proposition 7 stated that *"trust can be distinguished by the propensity to trust, affect and cognition based trust and that cognition based trust and affect based trust form the basis for goodwill and competence trust."* The major benefits in distinguishing the different forms of trust lie in the fact the, in this way, the vagueness associated with trust as 'everything social in a relationship' can be unravelled and that the exact function of trust, in its constituent parts, can be examined. The following propositions addressed the exact function of trust in IOR development and outcome. Proposition 2 stated that *" trust propensity, affect - and cognition based trust and habituation should be envisaged as enabling openness, creating joint opportunities, stimulating joint problem solving and loyalty, thereby complementing contracts".* Propositions 3 consequently stated that "*especially affect based trust would increase relationship efficiency by decreasing start-up costs, destructive conflict and defensive behaviour."*

Empirical findings

The different forms of trust i.e. trust propensity, affect and cognition based trust, leading to goodwill based and competence trust, could be clearly recognised in the TIMP case (proposition 7). Also their function in IOR development and outcome was illuminated. Important indications of their function were found in the TIMP, New-Wrap and Electro-Device cases (proposition 2):

Trust propensity does not only play a role in the ease of entering IORs, it also influences the way partners work together (TIMP incident between John and Patrick). A higher trust propensity enables openness, joint problem solving and a better chance on IOR success.

Cognition based trust forms the basis on which partners perceive joint opportunities and decide to enter into cooperation. Furthermore, partners that have prior experience with one another experience less conflict because they already know what to, and what not to, expect. Prior exchange, reputation and/or joint project execution forms the basis for cognition based trust. If cooperation progresses well, competence trust is formed.

Affect based trust increases openness, and relationship and technological success. In TIMP and New-Wrap, affect based trust provides the basis for openness and joint problem solving. If firms are not, or no longer, mutually dependent, affect based trust will unlikely be sufficient to 'save' the relationship (Electro-Device). Personal interaction forms the basis for affect based trust and when friendly relationships are established this forms the basis for goodwill trust (e.g. loyalty, joint problem solving).

Habituation between partners increases openness and joint problem solving and hence increases the relational and technological success.

In the TIMP, Gauge and Electro-Device cases the special importance of affect based trust was clear (proposition 3). It became clear that especially affect based trust enables an atmosphere in which openness, creativity and joint problem solving can flourish. This atmosphere is needed for successful technological projects, which are, after all, surrounded by uncertainty, unexpected changes and thus require flexibility, adaptability and creativity of partners.

Hypotheses

The confrontation of the propositions and the cases leads to the following hypotheses[18]:

T1: Trust can be distinguished into trust propensity, cognition and affect based trust.

T2: A high trust propensity decreases defensive behaviour and conflict and increases the relational and technological success of a relationship.

T3: Cognition based trust is both a cause and the result of the relational and technological success of the relationship.

T4: Affect based trust is both a cause and the result of a high level of openness, relational and technological success, and a low level of defensive behaviour, opportunism, monitoring and conflict.

[18] In chapters 3 to 7, affect and cognition based trust were discussed as a basis for goodwill and competence trust. Because only affect and cognition based trust have been operationalised and measured in the questionnaire, the quantitative part of this thesis (chapter 8) will focus on affect and cognition based trust only and will not discuss goodwill and competence trust. Hence the hypotheses do not mention goodwill or competence trust.

T5: Habituation is both a cause and the result of a high level of openness, relational and technological success, and a low level of defensive behaviour, opportunism, monitoring and conflict.

Conclusions and consequent hypotheses on contract

A second set of propositions is concerned with the relationship between trust and contract (propositions 1, 3, 8a&b). The attention to the relationship between trust and the use of contracts was drawn from the theoretical discussion in chapter 3. The basic argument was that contracts serve to safeguard opportunism and that since trust reduces the fear for opportunism, the need for contracting would also be reduced. Already in the TIMP case, contracts appeared to have more meanings than simply a safeguarding function only. It appeared that they could also be a sign of commitment and could be interpreted as a reflection of the IOR it represents.

Propositions

Because different meanings of contract were found relating to more trusting or opportunistic circumstances, the following propositions were formulated. Proposition 1 stated that *"contracts can entail arrangements that can both be seen as a reflection of established trust relationships (commitment contract) and arrangements aimed at preventing opportunism (safeguarding contract). Contracts will differ according to the emphasis placed on certain types of arrangements and in that way reflect the character of the relationship they represent."* It was expected that the content of these contracts would differ according to the atmosphere in which the relationship evolved and hence that it would not be contract completeness that would be related to lower levels of trust, but the contract's content. Therefore Proposition 8a stated that in order *"to understand the relationship between contract and trust one should focus on the content rather than on the completeness, presence or absence of contracts."* It was not expected that the content of a contract in itself could influence IOR development and outcome. Active use of a contract and monitoring however were expected to do so. Hence Proposition 8b stated that *"active use of the contract and intensive monitoring increases the level of conflict while decreasing trust and the relational and technological success of the relationship."*

Empirical findings

Important indications of the different content and functions of contracts (proposition 1) were already found in the TIMP case. These findings were confirmed by the case analyses in chapter 6 in which contracts were examined in different atmospheres. In the TIMP case the contracts primarily focused on which goals should be pursued and in which manner (commitment contract). When asymmetric dependence became visible and fear of opportunism grew, safeguarding arrangements and sanctions were added. In that sense, the contract reflected the IOR character and development.

In the Chem-Venture case, 'what-if' situations were accounted for from the start (safeguarding function) but the contracts also reflected the established commitment and trust. The IOR environment in the Chem-Venture case increased the emphasis on safeguarding arrangements because of the ease of knowledge transfer (codified knowledge), the costs of technological development and hence the fear for spill-over.

In most cases, indications were found that the content of contracts differ according to what function they predominantly fulfil (show commitment, safeguard). This content can also change over time when new circumstances or insights call for new contractual arrangements. No indications were found that the need for contracting decreased in a trusting atmosphere (proposition 8a). Rather the content of contracts would be different i.e. less focus on safeguarding arrangements. Furthermore it was found that trust made it easier to specify contracts because agreements could easier be reached. Increased fear of opportunism increased the perceived need for safeguarding arrangements and monitoring (e.g. TIMP and Special Food cases). Active contract use and intensive monitoring though appear to be detrimental to the relationship (proposition 8b). In the TIMP case, intensive monitoring led to conflict and dissatisfaction and hence decreased affect based trust. When parties actively use the contract to enforce certain behaviours, or propose changes to the contract to prevent unwanted behaviour, this increases the level of conflict and is detrimental to a trusting atmosphere.

In short, the contract's function can vary from showing commitment through to safeguarding the relationship. Mostly these functions will be mixed. If fear of opportunism increases, the perceived need for safeguarding arrangements and monitoring will also increase. Affect based trust will decrease opportunism and the perceived need to use safeguarding contracts and monitoring. The contract's content will also be influenced by the ease of knowledge transfer (the possibility to protect knowledge because it is for example tacit) and the costs of technological development (as a measure of the costs associated with unwanted knowledge transfer). The higher the risk and costs of unwanted knowledge transfer, the more emphasis will be placed on arrangements safeguarding spill-over, contract completeness and monitoring.

Hypotheses

The confrontation of the propositions and the cases leads to the following hypotheses:

C1: Contracts can have two (complementary) interpretations in IOR development: They can reflect trust and commitment to the relationship (commitment contract) and, they can be installed to safeguard against opportunism (safeguarding contract).

C2: A commitment contract will predominantly include arrangements directed towards the setting of goals and the ways of achieving them (investments, project plan, project management).

C3: A safeguarding contract will predominantly include arrangements directed at the protection of spill-over (secrecy, product and knowledge ownership) and ways to safeguard the relationship from opportunism (conflict resolution, relationship adjustment and termination).

C4: Commitment contracts reflect relationships with a high level of trust whereas safeguarding contracts reflect of relationships where fear of opportunism or unwanted knowledge transfer prevalent.

C5: A trusting atmosphere is not negatively related to contract completeness. Instead, it is related to the contract's content, being aimed at goal setting and realisation (commitment contract).

C6: Active use of the contract and intensive monitoring increases the level of conflict and is detrimental to a trusting atmosphere and technological and relational success.

Conclusions and consequent hypotheses on dependence

A third set of propositions centred around the function of mutual or asymmetric dependence in IOR development and outcome (propositions 4 and 9). From the theoretical discussion, in chapters 2 and 3, asymmetric dependence appeared to be detrimental to a company's bargaining position and consequently it was argued that a more dependent company would experience more conflict.

Propositions

Already in the TIMP case the theoretical expectations were confirmed and hence Proposition 4 was formulated as *"dependent companies have less bargaining power, and experience more conflict."* In the theoretical chapters private ordering by, for example, reducing one's dependence, was discussed as a way to deal with this problem. The reason behind this was that, in a balanced relationship, less room would exist for opportunism and partners would have equal bargaining positions and interests to maintain a cooperative relationship. In the TIMP case mutual dependence appeared so important that Proposition 9 was formulated as *"trust and openness can only develop in a balanced relationship."*

Empirical findings

In the Special Food and Green Onion case the TIMP findings were confirmed in that more dependent companies experience more conflict than their more powerful partners (proposition 4). In the Special Food case, the more dependent company could not negotiate a 'fair' contract, was not able to monitor project progress sufficiently and was unable to enforce project execution in the way negotiated. Hence a high level of conflict was experienced. In the Green Onion case the more dependent party did not have the power to negotiate the desired form of cooperation. This led to discontent and to a search for an alternative partner. In chapter 6, in which IORs are examined in different atmospheres, strong indications are found that mutual dependence is a necessary condition for openness and the development of a trusting atmosphere (proposition 9). Mutual dependence reduces the chance of opportunistic behaviour by either party and enables the development of affect based trust, habituation and openness (trusting atmosphere). Asymmetric dependence conversely, hinders the development of a trusting atmosphere. This is because the partner 'in power' has, as a result of the asymmetric dependence, more room for opportunism and hence the more dependent partner feels more need for defensive behaviour and monitoring, and experiences more conflict (opportunistic atmosphere). This was due to fear of opportunism, and limited bargaining power to prevent actual opportunism. Indications for this relationship were found in the Gauge and Special Food cases.

Also, when a relationship is started in a trusting atmosphere and with mutual interests, trust quickly breaks down when interests change and mutual dependence changes into asymmetric

dependence (e.g. Gauge and Electro-Device cases). When this occurs, a trusting atmosphere can quickly change into an opportunistic atmosphere in which conflict, defensive behaviour and monitoring prevail. Asymmetric dependence need not be a problem if regular interactions have taken place without the more powerful partner misusing its relative power. In general though, a situation of mutual dependence stimulates trust and openness because fear of opportunism is less present.

The relationship between asymmetric dependence and the content of a contract has also been examined, because asymmetric dependence is argued to lead to an opportunistic atmosphere and hence parties will be inclined to draw up safeguarding arrangements against opportunism by their partner. Especially the more dependent partner will be inclined to draw up safeguarding and spill-over contracts to defend its interests against the more powerful partner. However, because of the limited bargaining power of the more dependent partner, the perceived increased need for safeguarding and spill-over arrangements may not result in more complete contracts. This implies a difficulty for quantitative testing since an increased need for safeguarding arrangements may not be visible in the content of a contract since the more dependent partner may not have been able to enforce inclusion of such arrangements.

Hypotheses

The confrontation of the propositions with the cases have led to the following hypotheses:

D1: Asymmetric dependence negatively influences affect based trust, habituation and openness (trusting atmosphere) and stimulates an opportunistic atmosphere, whereas mutual dependence has the opposite effect.

D2: If a party is asymmetrically dependent on its partner, the stronger partner will have more room for opportunism. As a result the weaker party will show more defensive behaviour, pay more attention to monitoring, and experience more conflict.

D3: Asymmetric dependence increases the use of spill-over and safeguarding contracts.

D4: Asymmetric dependence negatively influences the relational and technological success of the relationship, whereas mutual dependence stimulates it.

Conclusions on the relatedness of trust, dependence and contract

The final group of propositions (propositions 5 and 6) centred around the interrelatedness of trust, dependence and contract, and their dynamic nature in IOR development. As was stated in chapter 3, trust could be both something that evolves naturally in a relationship and it could be consciously used as an influencing mechanism. Likewise, contracts could be seen as a reflection of the negotiation processes between partners and the development of their relationship, but could also be actively used as a ordering mechanism. Lastly dependence is sometimes fixed, but the balance of dependence between partners can also consciously be changed, for example to

increase one's bargaining power. In all these situations the dynamics of the different ordering mechanisms in their effect on IOR development and the other ordering mechanisms is central.

Propositions

Based on the theoretical chapters on the role of trust, dependence and contract in interorganisational relationships, and their dynamic interactive function in IOR development, Proposition 5 was formulated as *"the relationships between trust, dependence and contract can only be uncovered by considering these mechanisms as dynamic and interrelated in a non-linear way."* As stated, trust, dependence and contract are always present in interorganisational relationships in one way or another, but they can also be consciously used to influence a partner and the development of a relationship. Hence Proposition 6 stated that *"social, legal and private ordering can be complementary in influencing and controlling IOR development and preventing opportunism."*

Empirical findings

Especially in the TIMP case, because this case described the IOR dynamics in greatest detail, it became clear that trust, dependence and contract are interrelated in a dynamic, non-linear way (proposition 5). But also in the mini-cases their complex interrelatedness appeared. The interrelatedness between the ordering mechanisms are summarised below.

Trust ➔ *Dependence:* Affect based trust increases the willingness to increase one's dependence on a partner (e.g. EMI network), but strong asymmetry in the relationship can decrease the level of affect based trust (e.g. Gauge, Electro-Device).

Trust ➔ *Contract:* Likewise, cognition and affect based trust formed the basis on which partners drew up their contracts (e.g. TIMP), but actual use of these contracts and monitoring could harm the established trust relationships (e.g. TIMP conflict between John and Patrick). Furthermore, a high level of trust could lead partners to refrain from using contracts (e.g. New-Wrap) but could also provide the basis to enable extensive contracting (e.g. Chem-Venture).

Dependence ➔ *Contract:* Asymmetric dependence increases a partner's perceived need for contracting to safeguard its interests (e.g. the engineering companies in TIMP), but high dependence will decrease a firm's bargaining power to negotiate such a contract (e.g. Green Onion). Furthermore, high dependence will stimulate the more dependent partner to intensively monitor its more powerful partner and actually use the contract to enforce the negotiated agreement because it has no other power to enforce it (e.g. Special Food).

Dependence ➔ *Trust:* Asymmetric dependence increases the room for opportunism by the more powerful partner, and hence the chance that an opportunistic atmosphere will be present or evolve. In such an atmosphere, affect based trust will be hard to maintain (e.g. Gauge). As a result of this opportunistic atmosphere, defensive behaviour and conflict will more likely occur.

Contract ➔ *Dependence*: Effects of the contract's content and function on dependence were not uncovered.

Contract ➔ *Trust*: It is not the content or meaning of a contract that influences the level of trust between partners, but the intensity of monitoring and actual use of the contract (coercive power) that harms the development or level of affect based trust between partners (e.g. TIMP).

Actual use of a contract occurs when parties call upon the contract to defend their rights or enforce certain behaviour. It also implies that adaptations can be proposed or made to achieve this. In general such behaviour will harm a trusting atmosphere.

The way in which the ordering mechanisms are used and combined to influence and control the relationship (proposition 6) will vary, including over the course of time when relationships develop and internal and external conditions change. From the cases studied it became clear that every relationship is characterised by uses of trust, dependence and contract. Some relationships are predominantly based on trust and mutual dependence and lack contractual arrangements (e.g. the New-Wrap case, and the EMI group in the TIMP case). Other relationships lack trust and mutual dependence but are detailed in extensive contracts (e.g. Special Food). The Chem-Venture case is a good example of an IOR in which trust, mutual dependence and contract mutually reinforce each other.

Over time changes can occur or be consciously made in the ordering mechanisms. Due to external developments interests may change and, as a result, mutual dependence can change into asymmetric dependence (e.g. Electro-Device and Gauge cases). The balance in the relationship can also be consciously changed to decrease dependence and increase one's bargaining position (the engineering companies in the TIMP case). Changes in the level of trust may occur due to disappointing performance (competence trust), conflict or differences in the cooperative attitude of partners (affect based trust). Trust may also be consciously built or nurtured by reliable performance, open communication, a cooperative attitude and paying attention to the interpersonal aspects of the relationship. Changes in the level of trust and dependency balance can, in turn, influence the use of contracts and monitoring. In the TIMP case, increased awareness of asymmetric dependence and the fear of opportunism led some partners to want to complement their contract with safeguarding arrangements and sanctions. In the Special Food case, asymmetric dependence and conflict increased the perceived need for monitoring and control. The longitudinal analysis of IOR development made it clear that the functioning of, and interrelatedness between, the ordering mechanisms cannot be understood without a dynamic IOR perspective. From the case analyses in chapters 5 and 6 it also became clear that mutual dependence and trust are critical factors in the relational and technological success of the relationship. In the cases where both were lacking (Gauge, Special Food), neither the relationship nor the technological outcome were satisfactory and contractual arrangements could not prevent the relationships to breaking down. The relationship between the contract's content and function, and relational and technological success is not clear.

Since these dynamic relationships between trust, dependence and contracts are complex and can mostly function in multiple ways, it is not easy to investigate these relationships in a quantitative way. Hence, the thorough discussion presented above will serve as the test of propositions 5 and 6, and no quantitative analysis will be made to determine the strength and direction of these relationships. The other hypotheses, on trust, dependence and contracts, will be operationalised and tested in chapter 7.

7

Operationalisation and hypotheses testing

"No single method is always superior. Each has its own special strengths, and weaknesses. It is time to recognise this fact and move on to a position that permits to approach problems with all relevant and appropriate methods …" Denzin 1970.

7.1 Introduction

As discussed in chapter 1, this thesis makes use of a three-step approach of acquiring insights into IOR development and success. Step one emphasised the dynamic IOR developments in full detail in the longitudinal case study of TIMP. Step two focused on testing the earlier findings by the study of seven additional longitudinal cases. In this chapter, the third step, a quantitative test of the developed hypotheses will be presented. To refresh the findings from the previous steps, first a short summary of these steps will be given. From this summary the connection can be made to the third step. The third step involves operationalisation of the key variables and testing of the formulated hypotheses. As noted in the research methodology in chapter 1, a questionnaire has been designed covering the most important concepts. Operationalisation of these concepts is as far as possible carried out in line with earlier validated questionnaires. Telephone interviews have consequently been conducted with 391 respondents concerning their cooperative high technology projects in biotechnology, chemicals, new materials, and information, environmental, and maritime technologies. In this chapter the hypotheses will be tested on the basis of the acquired survey data.

7.2 Earlier findings leading to formal hypotheses

Problem statement and theory: In chapter 1 the central questions in this thesis were defined. The three research questions were: a) how interorganisational relationships develop over time, b) what role trust, dependence and contract play in interorganisational relationship development, and c) how these factors relate to the relational and technological success of the relationship. In chapters 2 and 3, first the theoretical building blocks were discussed that increased insight into the relationship between trust, dependence and contract, and relationship development. These insights led to further refinement of the research questions and to the formulation of research

propositions. These research propositions formed the starting point for the qualitative research, i.e. the cases presented in chapters 4, 5 and 6.

Step 1: TIMP - a longitudinal case study

In chapters 4 and 5, emphasis was placed on the first two research questions. IOR developments were described as evolving through stages of negotiation, commitment and execution (research question 1). Negotiations were based on previous experiences and joint expectations. In the description of the TIMP case it was shown that the development of relationships can very well be analysed on the basis of these stages and that such a description gives good insights into relationship development over time. Based on the dynamic description of TIMP, the influence of the ordering mechanisms, trust, dependence and contract were analysed in chapter 5 (research question 2). Because of the dynamic analysis of the role of trust, dependence and contract, different and new insights were derived from those suggested by some of the papers discussed in chapters 2 and 3. The most remarkable insights were related to the complex dynamic relationships between trust, dependence and contract. Contracts appeared to have a different content and meaning if drawn up in a relationship based on trust, and further trust and openness were difficult to achieve if there was asymmetrical dependence. Furthermore, asymmetric dependence could lead to conflict and to initiatives to change the relationship balance. Since the TIMP projects were only few, no direct relationship was drawn with the technological success of the relationship.

Step 2: Documentary case analysis of seven high tech IORs

Because the insights from TIMP were partly different to those proposed in the papers discussed in chapters 2 and 3, seven additional cases were analysed in chapter 6 to verify whether the same relationships could be found as those in the TIMP case. Because the TIMP case suggested that contracts would differ in high trust relationships, different atmospheres were defined in which a relationship could develop. A trusting atmosphere reflected a relationship in which trust in the other's goodwill dominated fear of opportunism. An opportunistic atmosphere, on the other hand, indicated a relationship in which fear of opportunism dominated trust in one another. Furthermore, a distinction was made between relationships characterised by more or less balanced dependencies (interests) and those characterised by asymmetric dependence. As a result of this categorisation (trust/opportunism, mutual/asymmetric dependence), additional insights could be gained on the influence of trust, dependence and contract on IOR development, and also on the interaction between these mechanisms. The indications derived from the case analyses were confronted with the propositions from chapters 2 and 3 and with the findings from the TIMP case. From this confrontation it was concluded that the content of contracts would vary according to the relationship characteristics. Furthermore, both the absence of trust and the absence of symmetrical dependence appeared to be detrimental to relationship continuation and success. This outcome shed the first light on to the third research question: how do trust, dependence and contract relate to the relational and technological success of the relationship.

Step 3: Hypotheses testing in a sample of 391 high tech IORs

The combination of the theoretical insights from chapters 2 and 3, and the empirical insights from chapters 4, 5 and 6, provide sufficient ground on which to build the final hypotheses for testing in a quantitative analysis. The hypotheses are presented in Table 7.1.

7.3 Research method

To examine the relationships between the different ordering mechanisms (trust, contract, dependence[19]) and relationship characteristics (conflict, openness, success) correlation analysis will be used. In a correlation analysis one examines how well two (or more) variables vary together (Harnett & Murphy 1985:585). The strength of this relationship is expressed using the population correlation coefficient ρ (rho) that is defined as:

$$\rho = \frac{\text{Covariance of x and y}}{\text{(Std. dev. of x)(Std. dev. of y)}} = \frac{C(x, y)}{\sigma_x \sigma_y}$$

Three values of ρ serve as benchmarks for the interpretation of a correlation coefficient. If x and y are linearly related, then their relationship can either be positive or negative, with a perfect relationship signified by 1 or -1. If x and y are not linearly related, the value of the correlation coefficient will be zero, since in this case C(x, y) = 0. Thus, ρ measures the strength of the linear association between x and y. Values close to zero indicate a weak relationship, and values close to -1 or +1 indicate a strong, negative or positive, correlation.

[19] NB: Because the hypotheses on dependence make use between distinction of the different types of contract, first the hypotheses on contract are examined and the results used for the analysis of dependence. Therefore the order used in earlier parts of this thesis (trust, dependence and contract) is in this last chapter changed into trust, contracts and dependence.

Hypotheses on trust, dependence and contract	
Trust	T1: Trust can be distinguished into trust propensity, cognition and affect based trust. T2: A high trust propensity decreases defensive behaviour and conflict and increases the relational and technological success of a relationship. T3: Cognition based trust is both a cause and the result of the relational and technological success of the relationship. T4: Affect based trust is both a cause and the result of a high level of openness, relational and technological success, and a low level of defensive behaviour, opportunism, monitoring and conflict. T5: Habituation is both a cause and the result of a high level of openness, relational and technological success, and a low level of defensive behaviour, opportunism, monitoring and conflict.
Contract	C1: Contracts can have two (complementary) interpretations in IOR development: They can reflect trust and commitment to the relationship (commitment contract), and; they can be installed to safeguard against opportunism (safeguarding contract). C2: A commitment contract will predominantly include arrangements directed towards the setting of goals and the ways of achieving them (investments, project plan, project management). C3: A safeguarding contract will predominantly include arrangements directed at the protection of spill-over (secrecy, product and knowledge ownership) and ways to safeguard the relationship from opportunism (conflict resolution, relationship adjustment and termination). C4: Commitment contracts reflect relationships with a high level of trust whereas safeguarding contracts reflect of relationships where fear of opportunism or unwanted knowledge transfer prevalent. C5: A trusting atmosphere is not negatively related to contract completeness. Instead, it is related to the contract's content, being aimed at goal setting and realisation (commitment contract). C6: Active use of the contract and intensive monitoring increases the level of conflict and is detrimental to a trusting atmosphere and technological and relational success.
Dependence	D1: Asymmetric dependence negatively influences affect based trust, habituation and openness (trusting atmosphere) and stimulates an opportunistic atmosphere, whereas mutual dependence has the opposite effect. D2: If a party is asymmetrically dependent on its partner, the stronger partner will have more room for opportunism. As a result the weaker party will show more defensive behaviour, pay more attention to monitoring, and experience more conflict. D3: Asymmetric dependence increases the use of spill-over and safeguarding contracts. D4: Asymmetric dependence negatively influences the relational and technological success of the relationship, whereas mutual dependence stimulates it.

Table 7.1 Hypotheses on trust, dependence and contract.

Naturally one does not have data for the whole population so the population parameter ρ is estimated using sample data. The equivalent sample statistic is called the sample correlation coefficient r. The value of r is defined in the same way as ρ, except sample data is substituted. This leads to the following definition:

$$r = \frac{\text{Covariance of sample values of x and y}}{\text{(Sample std. dev. of x)(Sample std. dev. of y)}} = \frac{Sxy}{Sx\,Sy}$$

The sample correlation coefficients are interpreted in the same manner as ρ, except that they measure the strength of the sample data rather than the population as a whole. Whereas r indicates the strength of the linear relationship, the squared value of r (r^2) represents the goodness of fit statistic (Harnett & Murphy 1985: 590).

To test whether the correlation is significant, t-test statistics can be used. Because this chapter examines the relationships between the different ordering mechanisms (trust, dependence, contract) and relationship characteristics (e.g. conflict, success) the null hypothesis will be that there is no relationship between the variables. The alternative hypothesis will state that the relationship is significantly larger or smaller than zero, or mathematically:

H_o: $\mu = 0$ (Null hypothesis: there is no relationship between the variables)

H_a: $\mu > 0$ (Alternative hypothesis: there is a positive relationship between the variables)

H_a: $\mu < 0$ (Alternative hypothesis: there is a negative relationship between the variables)

The major purpose of hypothesis testing is to choose between two mutually exclusive and exhaustive competing hypotheses about the value of a population parameter. The two conflicting hypotheses are referred to as the null hypothesis (H_0) and the alternative hypothesis (H_a) (Harnett & Murphy 1985:430-31). To test whether the correlation coefficient differs significantly from zero (H_0), the t-statistic for testing the correlation coefficient ρ is defined as:

$$t_{(n-2)} = \frac{r\sqrt{(n-2)}}{\sqrt{(1-r^2)}}$$

The interpretation of the resulting t-value is the probability that the value of r would occur by chance (Harnett & Murphy 1985: 600). With this test a confidence interval can be chosen on the basis of which one can decide whether there is enough evidence to declare H_o false and accept H_a. H_o is rejected on the basis of only a reasonable doubt about its truth. Since the decision to accept or reject H_o is based on probabilities and not on certainty, it is possible to make an error in the decision. There are two types of potential error:

– Type I error: Rejecting H_o when this hypothesis is true.
– Type II error: Accepting H_o when this hypothesis is false.

The t-test renders information on the probability of a Type I error. The level of significance is thus comparable to the probability of a Type I error. The value of (1-t) is called the confidence level and represents the complement of the probability of a Type I error (accept $H_o | H_o$ is true).

For testing the hypotheses in this chapter a 5% confidence interval is used which indicates that there is a 5% chance of rejecting H_o when there is actually no relationship between the variables (i.e. H_o is true). The t-value should thus be lower than 0.05. In short, in the correlation analysis three points will be critical when interpreting the results:

– The significance of the correlation (can we reject H_o?);
– the strength of the correlation (is there a weak or strong relationship?);
– the sign of the relationship (is there a positive or negative linear relationship?).

The different hypotheses will be examined making use of these points to arrive at the final conclusions on the relationships between the different ordering mechanisms and relationship characteristics. The hypothesised relationships will be examined by first presenting the operationalisation of the concepts under examination. Following this, the correlation analysis is carried out using SPSS 8.0 for Windows.

7.4 The content and function of trust in IOR development and success

To examine the content and function of trust in the development of interorganisational relationships, first an operationalisation was carried out covering the different forms of trust. The operationalisation was based on earlier research and the questions in the questionnaire were adopted from earlier questionnaires (McAllister 1995, Nooteboom et al. 1997).

Table 7.2 shows the different forms of trust, their definition, operationalisation and the Cronbach alpha score. Three remarks should be made on the operationalisation of the different forms of trust. First, trust propensity is measured at the company level. It is operationalised in such a way that it relates to the general willingness of a company to cooperate with external partners. Secondly, cognition based trust is operationalised in the light of the process model presented in chapter 4. It strongly reflects the previous experience of partners. In the qualitative part of this thesis, cognition based trust was considered and analysed as the basis of competence trust. Since the questionnaire did not contain items explicitly directed at measuring a partner's competencies, the quantitative part solely focuses on cognition based trust. The same holds true for affect based trust. In the qualitative research, affect based trust was described and analysed as the basis for goodwill trust (e.g. the loyalty of partners). In the quantitative part of this thesis goodwill trust was not directly measured and therefore affect based trust is focused on. Thirdly, the measurement of habituation has posed some problems because the initial two-item scale did not score well on the Cronbach alpha test (α = 0.45). Therefore, a single item was chosen that would better reflect habituation. To test hypothesis T1 (trust can be distinguished by trust propensity, affect and cognition based trust, and habituation is different from these forms of trust) a factor analysis was made. The results of this analysis are presented in Table 7.3.

Variable	Definition	Items	Alpha
Company's trust propensity	Initial willingness to cooperate with external partners	1. If the situation allows us to, our company prefers to work alone 2. In our company we have a culture directed towards cooperation and cooperative ties with external partners	α = 0.70
Cognition based trust	Continuation of long term, successful relationship	1. Our current relationship is a continuation of a previous, long term relationship 2. We only knew each other for a short while but thought we could manage the project together 3. Before this project a friendly relationship had already been established	α = 0.81
Affect based trust	Care, concern, honesty and understanding in IOR	1. During the project, our partner treated our problems constructively and with care 2. I have never had the feeling of being misled 3. We understood each other well and quickly	α = 0.74
Habituation	Used to each other's working procedures	1. During the project, we have become accustomed to each others working methods and procedures	Single item

Table 7.2 Operationalisation of the different forms of trust.

Rotated Factor Matrix[20]				
	Factor	1	2	3
Company's trust propensity	Item 1 (NUM087)	-6.468E-03	**.528**	.106
	Item 2 (NUM088)	2.467E-02	**.987**	.143
Cognition based trust	Item 1 (NUM018)	**.961**	8.715E-03	5.741E-02
	Item 2 (NUM019)	**.779**	-1.019E-02	2.602E-02
	Item 3 (NUM023)	**.590**	-6.696E-03	7.458E-03
Affect based trust	Item 1 (NUM066)	6.898E-02	4.928E-03	**.745**
	Item 2 (NUM067)	3.097E-02	8.238E-02	**.414**
	Item 3 (NUM068)	5.169E-02	6.983E-02	**.662**
Habituation (single item)	(NUM069)	-4.989E-02	6.777E-02	**.370**

Table 7.3 Factor analysis of the different forms of trust.

From the factor analysis it can be seen that three rather that the hypothesised four factors are retrieved. Habituation loads on affect based trust although the loading is lower than that of the items that were expected to represent affect based trust. From the Cronbach alpha test it becomes clear that the inclusion of habituation in the affect based trust scale leads to a lower Cronbach alpha (0.69

[20] Extraction Method: Maximum Likelihood. Rotation Method: Varimax with Kaiser Normalisation. Rotation converged in 5 iterations.

instead of 0.74). For this reason habituation is treated as a separate variable. The relatively high loading on affect based trust indicates though, that affect based trust and habituation are closely related. Furthermore it can be concluded that the factors are very distinct. In most cases only the items that were designed to measure the construct, solely load on that factor. The loadings of these items on the other factors are in most cases very close to zero. This indicates that the different forms of trust are not only recognised in theory and in qualitative analysis, but are also clearly distinguishable from the empirical data.

Outcome with regard to hypothesis T1: *The factor analysis confirms hypothesis T1 that different forms of trust can be recognised. No strong support is found that habituation forms a separate category.*

The second hypothesis addresses the exact function of the different forms of trust in IOR development and success. It states that a high trust propensity decreases defensive behaviour thereby increasing the relational and technological success of the relationship. To test this hypothesis, first an operationalisation of IOR success and defensive behaviour had first to be made. The operationalisation is presented in Table 7.4.

Variable	Definition	Items	Alpha
Technological Success	Technological success of the project	1. Technologically the project has been a success	Single item
Relationship quality/ relational success	The degree to which partners are satisfied with their relationship and are willing to continue their relationship	1. Can you indicate how satisfied you are with the working relationship with your partner (1-5) 2. Over the course of time, the relationship with our partner has improved and become more intense 3. Do you think you will continue your cooperation with this partner in the future (1-5)	α = 0.70
Defensive behaviour	The degree of resistance to influence by the partner firm	1. If our partner would have exercised influence over our company's affairs we would have rejected it	Single item

Table 7.4 Operationalisation of IOR success and defensive behaviour.

In this operationalisation two types of success were focused upon. First the technological success, because the IORs under study concern the technological development of new products and technologies. Because many of these projects are not yet in the commercialisation phase, market introduction and economic returns are not the major measures of success. Instead the fact that technological goals are reached provides the basis for further success. The measure for the technological success was designed as a single item scale. The second measure of success concerns the satisfaction with the working relationship with the partner, and the willingness to continue to cooperate. This success measure, and its operationalisation, are based on the process model as presented in chapter 4 in which the development, growth and continuation of

relationships was central. The three-item scale has a satisfactory Cronbach alpha ($\alpha = 0.70$). The operationalisation of defensive behaviour has posed some problems. The variable was designed as a three-item scale. The Cronbach alpha was however insufficient ($\alpha = 0.18$). Also a two-item scale could not be constructed successfully ($\alpha = 0.25$). Hence one item was chosen that would best represent defensive behaviour.

To test hypothesis T2; that a high trust propensity decreases defensive behaviour and conflict, and increases the relational and technological success of the relationship, a correlation analysis is carried out between the different variables. The results of this analysis are shown in Table 7.5.

		Defensive behaviour	Destructive conflict	Technological success	Relationship quality
Company's propensity to trust	Pearson correlation	**-.149****	**-.156****	**.101**	**.154****
	Significance	.003	.002	.059	.003
	N	391	391	351	380

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

Table 7.5 Correlation between trust propensity and relationship characteristics.

When these results are analysed based on the three criteria significance, the strength of the relationship and the sign of the relationship, the results are moderately successful. Although the correlations are significant at a 0.01 confidence interval (except for technological success) and the relationships are positively or negatively correlated as expected, the relationships are rather weak. If companies are open to cooperation with external partners (instead of preferring to do everything alone), they show lower levels of defensive behaviour (they do not resist influence by the partner firm) and achieve better results in their relationships. These linear relationships are weak though. The positive influence of trust propensity on the technological success of a relationship is not significant at the 95% confidence level.

The relationship with conflict is also examined (the operationalisation of conflict is presented in Table 7.6) because it is expected that companies with a higher trust propensity will be more willing to accept influence by a partner firm and will hence experience less conflict. Although the analysis confirms this expectation, the relationship between trust propensity and conflict is also weak.

> ***Outcome with regard to hypothesis T2:*** *The correlation analysis confirms hypothesis T2 that companies with a high trust propensity show lower levels of defensive behaviour and have more relational IOR success. The relationship with the technological success is not significant. Additionally it is found that trust propensity is negatively correlated with the occurrence of conflict.*

From a correlation analysis one cannot derive cause-effect relationships. However, in the analysis of trust propensity, a cause-effect relationship can be suggested because trust propensity has been defined and discussed as a basic attitude. This attitude is assumed not to change because of recent experience. Hence it can be argued that trust propensity is the cause and certain relationship

characteristics the effect. For the third, fourth and fifth hypotheses concerning the function of trust in IOR development this is more difficult. This is because cognition based trust, affect based trust and habituation are expected to be both a cause and the result of, for example, openness and relational IOR success. For this reason no cause-effect relationships are suggested. Hypotheses T3 to T5 were formulated as:

> *T3: Cognition based trust is both a cause and the result of the relational and technological success of the relationship.*
>
> *T4: Affect based trust is a cause and the result of a high level of openness, relational and technological success, and a low level of defensive behaviour, opportunism, monitoring and conflict.*
>
> *T5: Habituation is a cause and the result of a high level openness, relational and technological success, and a low level of defensive behaviour, opportunism, monitoring and conflict.*

To examine the relationship between the different forms of trust and IOR development and success, an operationalisation was made of openness, opportunism, monitoring and conflict. The operationalisation of the remaining variables is presented in Table 7.6.

Variable	**Definition**	**Items**	**Alpha**
Openness in the relationship	Disclosure of accurate information, sharing feelings and criticism	1. We talked openly and informally with our partner about our ideas, feelings and interests 2. We provided each other with all the information that was relevant to the project 3. Criticisms could be openly aired if this contributed to the completion of the project	α = 0.66
Opportunism ego	Propensity to switch partners	1. We would not initiate a relationship with another partner if this would harm our current partner	Single item
Opportunism alter	Opportunistic behaviour by the partner firm	1. Our partner tried to reap disproportional benefits from the cooperation 2. Our partner withheld important information for us	α = 0.66
Monitoring by ego	Perceived need for monitoring	1. We did not feel the need to constantly keep an eye on our partner	Single item
Destructive conflict	Conflict frequency and harm to the relationship	1. Misunderstandings have seldom occurred with our partner 2. Our partner and ourselves treated problems as a joint responsibility 3. Arguments have considerably harmed the productivity of the relationship	α = 0.79

Table 7.6 Operationalisation of variables related to opportunism.

A few remarks should be made about the operationalisation of the various concepts. Monitoring by ego (i.e. the respondent) was designed as a two-item scale. Since this scale had an insufficient Cronbach alpha ($\alpha = 0.54$) one item was chosen to represent monitoring by the respondent. The same problem occurred with the operationalisation of opportunism by ego. The original two-item scale had an insufficient Cronbach alpha ($\alpha = 0.34$) and hence one item was chosen to represent opportunism by ego. Opportunism by alter (i.e. the partner firm) had a satisfactory Cronbach alpha ($\alpha = 0.66$) and destructive conflict had a higher one ($\alpha = 0.79$).

Based on this operationalisation a correlation analysis was made between cognition and affect based trust and habituation on the one hand, and openness, defensive behaviour, opportunism, monitoring, conflict, and the technological and relational success of the relationship on the other. The results are shown in Table 7.7.

It is remarkable to see that cognition based trust, affect based trust and habituation all have their own distinct effect on the relationship characteristics and outcome. If these relationships are examined on three points (significance, strength and sign of the relationship), most relationships are significant, conform with the expected sign, but have weak strength.

		Defensive behaviour	Monitoring ego	Destructive conflict	Opportunism ego
Cognition based trust	Pearson correlation	**-.130****	**-.124****	**-.163****	.018
	Significance	.010	.014	.001	.722
Affect based trust	Pearson correlation	-.047	**-.562****	**-.724****	**-.174****
	Significance	.354	.000	.000	.001
Habituation	Pearson correlation	-.074	**-.192****	**-.260****	-.091
	Significance	.142	.000	.000	.071

		Openness	Technological success	Relationship quality
Cognition based trust	Pearson correlation	**.110***	.029	**.178****
	Significance	.029	.586	.001
Affect based trust	Pearson correlation	**.560****	**.157****	**.552****
	Significance	.000	.003	.000
Habituation	Pearson correlation	**.309****	**.108***	**.290****
	Significance	.000	.044	.000

** Correlation is significant at the 0.01 level (2-tailed), n=391

* Correlation is significant at the 0.05 level (2-tailed), n=391

Table 7.7 Correlation between cognition based trust, affect based trust, habituation, and relationship characteristics.

Cognition based trust (i.e. prior experience) has a weak negative relationship with defensive behaviour, monitoring and conflict, and a weak positive relationship with openness and relational success. It has no relationship with the propensity for opportunism by the respondent (loyalty) nor with the likelihood of technological success.

Affect based trust, does have a strong correlation with relationship characteristics ($r > 0.5$). From the analysis it can be seen that affect based trust has a strong positive correlation with openness and relational IOR success. A weak positive correlation was found with technological IOR success. Strong negative correlations were found with monitoring and conflict, whereas a weak negative correlation was found with the propensity for opportunism by ego (loyalty). This implies that affect based trust is much more strongly related to relationship characteristics than cognition based trust. Two possible explanations are provided for this outcome. First, cognition based trust was already described as a basic condition for cooperation. A company will not start an IOR with someone it does not know, and in whose capabilities it has no trust. This would imply that it would have a less strong influence on the relationship once it is established. Secondly, a difference in cognition based trust and affect based trust lies in the reciprocity of the concepts. Whereas cognition based trust is related to knowledge of, and trust in, the other's capabilities, affect based trust refers to a mutual established relationship. If ego indicates that their partner has treated their problems with care, has never misled them, and that they understood each other well, this can be interpreted as a relationship in which mutual feelings of care and concern are present. This explains why affect based trust has such a strong positive influence on IOR characteristics and confirms the expectation that it is especially affect based trust that is related to the trusting atmosphere needed to enable successful cooperative projects. The reciprocal nature also explains why affect based trust has a negative correlation with the respondent's propensity towards opportunism. Because a relationship of mutual trust has been established, parties tend to refrain from opportunism.

Lastly, the correlation between habituation, and IOR characteristics and outcomes, is examined. From the analysis it is clear that habituation, as expected, has the same function in IOR development and success as affect based trust. The only difference lies in the fact that the correlations are weaker and that habituation has no relationship with the propensity towards opportunism by ego.

> ***Outcome with regard to hypothesis T3:*** *The correlation analysis only confirms hypothesis T3 to the extent that cognition based trust is positively related to relational IOR success. Contrary to expectations it is not related to the technological success of the relationship. Additionally negative correlations were found between cognition based trust and defensive behaviour, monitoring and conflict, and a (weak) positive correlation with openness.*

Outcome with regard to hypothesis T4 and T5: *The analysis confirms hypotheses T4 and T5 in that affect based trust and habituation are positively correlated to openness, relational and technological success and negatively correlated to monitoring and conflict. Whereas affect based trust is negatively correlated to the propensity towards opportunism, habituation is not. Contrary to expectations, affect based trust and habituation do not decrease the level of defensive behaviour. Rather, cognition based trust unexpectedly showed a negative relationship with defensive behaviour. Apparently, prior exchange is of great importance to partners in reducing their resistance to influence by their partner (defensive behaviour), whereas affect based trust provides openness and loyalty (absence of opportunistic propensity) but does not imply acceptance of external influences.*

7.5 The content and function of contract in IOR development and success

After examining the content and function of trust I turn to the content and function of contracts in IOR development. Hypotheses C1 to C4 were concerned with the content and ego's perceived meaning of contract. To test these hypotheses 13 possible contractual arrangements were defined. Respondents were asked to indicate whether these arrangements were present in the contract with their partner. These arrangements are:

1. Goal and outcomes of the relationship
2. Duration of the relationship
3. Project plan (with sequential steps)
4. Investments by all parties (human, material and financial resources, knowledge)
5. Accountability for risks (internally as well as external to possible customers)
6. Project management (championship, communication, monitoring and control)
7. Pledge of secrecy
8. Ownership of product or technology
9. Ownership of method
10. Licence agreement
11. Patent rights
12. Arrangement for relationship adjustments or termination
13. Arrangement for conflict resolution (e.g. involvement of third party)

To test hypothesis C1, that different contract contents can be recognised, and hypotheses C2 and C3 that these different contents would focus on commitment or safeguarding, a factor analysis was made. The results of this analysis are presented in Table 7.8.

Rotated Factor Matrix[21]			
Factor	**1**	**2**	**3**
Goal and outcomes of the relationship (NUM030)	.233	.158	**.520**
Duration of the relationship (NUM031)	.216	9.528E-02	**.422**
Project plan (with sequential steps) (NUM032)	5.104E-02	1.186E-02	**.522**
Investments by all parties (NUM033)	5.392E-02	7.336E-02	**.530**
Project management (NUM035)	8.669E-02	.138	**.574**
Pledge of secrecy (NUM036)	**.555**	.250	.217
Ownership of product or technology (NUM037)	**.740**	.193	.232
Ownership of method (NUM038)	**.635**	.198	.156
Patent rights (NUM040)	**.452**	**.396**	4.100E-02
Accountability for risks (NUM034)	.122	**.523**	.264
Licence agreement (NUM039)	**.356**	**.400**	5.705E-02
Arrangement for relationship adjustments or termination (NUM041)	.280	**.615**	.141
Arrangement for conflict resolution (NUM042)	.198	**.727**	6.176E-02

Table 7.8 Factor analysis of the different content of contacts.

The results from the factor analysis exceeded expectations. Besides confirming the hypothesis that a safeguarding and commitment contract can be recognised, the factor analysis also renders information on a third type of contract. The types of contract and their interpretation are presented below.

The commitment contract: The first type of contract (factor 3, $\alpha = 0.67$) strongly resembles the contract defined as reflecting trust and commitment to the relationship. In this contract all arrangements can be laid down but emphasis is placed on arrangements concerning 1) goal and outcomes of the relationship, 2) duration, 3) planning, 4) investments and 5) project management. In the qualitative analysis this type of contract was predominantly found in trusting atmospheres.

The safeguarding contract: The second type of contract (factor 2, $\alpha = 0.71$) resembles the contract focused on safeguarding the relationship. In this contract emphasis is placed on 1) licence agreement, 2) risk accountability, 3) relationship adjustment or termination, and 4) conflict resolution. These arrangements mainly focus on the risks related to relationship development and problems that could occur along the way. Its function should be interpreted as managing the uncertain IOR process, and not as safeguarding the assets brought into the relationship. In the qualitative research this contract function was related to an opportunistic atmosphere.

The spill-over contract: The third type of contract recognised in the data (factor 1, $\alpha = 0.74$) had not been recognised in the qualitative cases but can well be explained by distinguishing the IOR

[21] Extraction Method: Maximum Likelihood. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 7 iterations.

risks associated with opportunism and spill-over. Opportunism refers to the conscious choice of a party to behave in a way that is harmful to its partner (e.g. relationship break-up). Spill-over of knowledge can happen accidentally and does not necessarily involve opportunistic intentions. If fear of unwanted knowledge transfer (consciously or unconsciously) is present, spill-over contracts can be expected since the spill-over contract is aimed at safeguarding material and other assets brought into the cooperation (ownership of products, technologies, knowledge, and patent-rights. Therefore this third type of contract is referred to as spill-over contract. The three types of contract are summarised in Table 7.9.

Because most contractual arrangements do not solely load on one factor, the above contracts should not be interpreted as either/or contracts. For example, the license agreements from the safeguarding contract, could also be ascribed to a spill-over contract. Patent rights can also be found under both contracts. This is not surprising since these arrangements are closely related, and can be interpreted as belonging to both the safeguarding and the spill-over function.

Commitment contract	Safeguarding contract	Spill-over contract
1. Goal and outcomes of the relationship 2. Duration of the relationship 3. Investments by all parties (human, material and financial resources, knowledge) 4. Project plan (with sequential steps) 5. Project management (championship, communication, monitoring and control)	1. Accountability for risks (internally as well as external to possible customer) 2. Licence agreement 3. Arrangement for relationship adjustments or termination 4. Arrangement for conflict resolution (e.g. involvement of third party)	1. Pledge of secrecy 2. Ownership of product and/or technology 3. Ownership of method 4. Patent rights

Table 7.9 The content of commitment, safeguarding and spill-over contracts.

The fact that the different arrangements do not exclusively 'belong to' one type of contract, does have consequences for the way in which the scores of the different contracts are calculated in further analysis. Instead of excluding contractual arrangements with a score lower than 0.4 for a certain factor, all scores are used to calculate the three contract types using a factor score regression. This method renders a more accurate reflection of the contracts as used by the respondents. Thus, although contracts are always a mixture of arrangements, they will tend towards one of the safeguarding, commitment or spill-over functions. To keep this distinction explicit, I will continue using the words 'commitment', 'spill-over' and 'safeguarding contract'.

> ***Outcome with regard to hypothesis C2:*** *The factor analysis confirms hypothesis C2. As was expected a commitment contract could be distinguished in the factor analysis that contained the predicted arrangements concerning goals and ways of achieving them.*

Outcome with regard to hypothesis C3: *The factor analysis gives additional insights into hypothesis C3. A safeguarding contract can be recognised and contains mainly arrangements aimed at safeguarding the IOR process. Additionally the spill-over contract was recognised as containing arrangements aimed at safeguarding material and other assets brought into the relationship.*

To test the second part of hypothesis C1, that the different contract contents can have different (complementary) meanings in a relationship (reflecting trust and commitment to the relationship and/or serving as a safeguard), a correlation analysis was made between the meaning that respondents themselves attached to their contracts and the factual content of the contract used. Therefore the respondents were asked to indicate to what extent their contract (1) could be considered as consolidating the developed trust between them and their partner, or (2) should serve as a safeguard against the opportunistic behaviour by their partner. The results of this correlation analysis are presented in Table 7.10.

			Factual contract content		
			Spill-over contract	Safeguarding contract	Commitment contract
Perceived meaning of contract	Contract as consolidation of trust	Pearson correlation	-.025	**.181****	**.156****
		Significance	.624	.000	.002
	Contract as safeguard	Pearson correlation	**.118***	**.198****	.015
		Significance	.019	.000	.769

** Correlation is significant at the 0.01 level (2-tailed), n=391
* Correlation is significant at the 0.05 level (2-tailed), n=391

Table 7.10The relationship between the perceived meaning and the factual content of a contract.

If the results are examined on the three points of significance, strength and sign of the relationship, careful conclusions can be drawn. From the correlation it can be seen that there is a significant but weak positive relationship between the meaning that respondents attach to their contracts to have and the actual content of these contracts. The fact that respondents perceive their contract as consolidating trust, positively correlates with a contract whose content predominantly focuses on commitment and safeguarding arrangements. This is contrary to the expectation that respondents who perceive their contract as reflecting trust and commitment would use commitment contracts (and thus not safeguarding ones). An explanation for the positive correlation with safeguarding arrangements is that partners that trust each other have a basis on which they can discuss difficult arrangements such as relationship termination and conflict resolution (safeguarding contract). An open discussion on potential conflict situations and ways of solving them, and the mutual willingness to confirm these types of arrangements in a written 'safeguarding' contract, can only be reached if a basic level of trust is present.

Respondents that perceive the contract to be predominantly a safeguard against the possible opportunistic behaviour of their partner, also draw up contracts that reflect this interpretation. There is a (weak) positive correlation between this interpretation of a contract and the actual content of

contracts aimed at safeguarding the relationship (safeguarding contract) and safeguarding unwanted knowledge transfer (spill-over contract). This means that both the safeguarding contract and the spill-over contract can be interpreted as being related to the fear of opportunistic behaviour by the partner firm.

> ***Outcome with regard to hypothesis C1:*** *The results of the correlation analysis partly confirm hypothesis C1. As expected, the contract's content can be both a reflection of trust and a means to safeguard the relationship. It was also found that safeguarding contracts often occur in a situation in which the contract is perceived as reflecting trust and commitment. This outcome can be explained by the fact that a trusting atmosphere provides the basis on which difficult 'safeguarding' arrangements can be discussed and agreed upon.*

The fourth and fifth hypotheses concerning the relationship characteristics and the contract's content stated that:

> *C4: Commitment contracts reflect relationships with a high level of trust whereas safeguarding contracts reflect of relationships where fear of opportunism or unwanted knowledge transfer prevalent.*
>
> *C5: A trusting atmosphere is not negatively related to contract completeness. Instead, it is related to the contract's content, being aimed at goal setting and realisation (commitment contract).*

Hypothesis C4 was formulated on the basis of the findings, in chapters 6 and 7 that the content of a contract reflects the atmosphere in which the relationship takes place. In a trusting atmosphere contracts can both be limited (relying on trust to fill in the gaps) and extensive (because agreement is easily reached) but the content will tend more towards the commitment contract. In an opportunistic atmosphere, contracts can also both be limited (because of asymmetric dependence or opportunistic attitude) and extensive (because of fear of opportunism) but the content will tend towards the safeguarding and spill-over contract elements. This observation led to the fifth hypothesis that it is not the contract's completeness, but its content that is related to the atmosphere in which the relationship takes place. An additional influence on the type of contract was expected to lie in the environmental uncertainties. Based on the transaction costs framework, and the case study findings, occurrence of safeguarding and spill-over contracts were expected to be positively related to environments in which it is difficult to protect knowledge and where the costs of technological development are high (C4). The operationalisation of the different atmospheres, difficulties with knowledge protection and costs of technological development is shown in Table 7.11. The operationalisation of environmental uncertainty, i.e. difficulties with knowledge protection, and costs of technological development, is based on Cainarca et al. (1992) and Green & Gavin (1995).

Variable	Definition	Items	Alpha
Trusting atmosphere	An atmosphere in which trust prevails over fear of opportunism or unwanted knowledge transfer (affect based trust + habituation + openness)	1. During the project, our partner treated our problems constructively and with care 2. I have never had the feeling of being misled 3. We understood each other well and quickly 4. During the project, we have become accustomed to each others working methods and procedures 5. We talked openly and informally with each other about our ideas, feelings and interests 6. We provided each other with all the information that was relevant to the project 7. Criticism could be openly aired if this contributed to the completion of the project	α = 0.66
Opportunistic atmosphere	An atmosphere in which opportunism, coercive power and conflicts occur	1. Our partner tried to reap disproportional benefits from the cooperation 2. Our partner withheld important information from us 3. Our partner forced us to do things exactly that way they wanted 4. We did felt the need to constantly keep an eye on our partner 5. Misunderstandings often seldom occurred with our partner 6. Our partner did not treat problems as a joint responsibility 7. Arguments have considerably harmed the productivity of the relationship	α = 0.71
Difficulties with knowledge protection	Possibilities for the protection of knowledge	1. In our industry it is no problem if someone sees the things we are working on 2. Because our knowledge is hard to protect, we are very careful in information exchange with our partners	α = 0.97
Costs of technology development	Costs of industry entry and development of new technologies	1. For a new entrant in our industry it is very costly to build-up the required technological knowledge 2. The cost of research and development on new products in is field are very high	α = 0.63

Table 7.11 Operationalisation of a trusting and opportunistic atmosphere and environmental uncertainty.

The operationalisation shows that a trusting atmosphere largely represents those relationship characteristics that positively contribute to a relationship (affect based trust, openness and habituation). The Cronbach alpha score of this scale is not very high but sufficient (> 0.6). An opportunistic atmosphere rather represents those characteristics that are expected to be detrimental to a relationship (opportunistic behaviour of the partner, monitoring by ego, and the occurrence of destructive conflicts in the relationship). The scale of opportunistic atmosphere is satisfactory (α = 0.71). The scale of difficulties with knowledge protection is very good (α = 0.97) whereas the scale of development costs is low but adequate (α = 0.63).

Based on this operationalisation a correlation analysis is made between the different types of contract and the atmospheres in which the relationship takes place. To test whether the content of the contract tells more about the atmosphere in which a relationship takes place than its completeness, the matrix also contains contract completeness as a variable. The results of this analysis are presented in Table 7.12.

		Perceived meaning of contract	
		Trust consolidation	Safeguard
Trusting atmosphere	Pearson correlation	.067	**-.148****
	Significance	.185	.003
Opportunistic atmosphere	Pearson correlation	.002	**.208****
	Significance	.969	.000
Difficulties with knowledge protection	Pearson correlation	-.064	**.112***
	Significance	.206	.027
Costs of technology development	Pearson correlation	.063	-.038
	Significance	.215	.451

		Actual content of contract			
		Spill-over contract	Safeguarding contract	Commitment contract	Contract completeness
Trusting atmosphere	Pearson correlation	**-.083**	.082	**.114***	.064
	Significance	.099	.104	.024	.209
Opportunistic atmosphere	Pearson correlation	.069	-.021	**-.084**	-.022
	Significance	.175	.673	.097	.658
Difficulties with knowledge protection	Pearson correlation	.004	-.034	.025	-.004
	Significance	.937	.502	.616	.945
Costs of technology development	Pearson correlation	**.140****	**.101***	.094	**.157****
	Significance	.006	.045	.063	.002

** Correlation is significant at the 0.01 level (2-tailed), n=391
* Correlation is significant at the 0.05 level (2-tailed), n=391

Table 7.12Correlation between atmosphere and the meaning and content of contract.

When considering the three aspects used in the interpretation of these results; significance, strength and sign of the relationship, we have to conclude that many relationships are significant and show the expected positive or negative sign, but that the linear relationships are weak. From the correlation matrix it can be seen that there is a weak negative correlation between a trusting atmosphere and the perception that contracts should serve as a safeguard. The fact that respondents in a trusting atmosphere do not view their contract as a safeguard is also reflected in the actual content of their contracts. There is a weak positive relationship between a trusting atmosphere and the occurrence of commitment contracts, whereas there is a very weak negative relationship with spill-over arrangements (this correlation is not significant on the defined confidence interval but would at the 90% confidence level).

Rather, there is a positive correlation between an opportunistic atmosphere and the perception that contracts should safeguard against opportunistic behaviour. This is not clearly visible in the contract's content though. Only a weak negative relationship was found between an opportunistic atmosphere and a commitment contract (this correlation is not significant on the defined confidence interval but would be so at a 90% confidence level). No positive correlation was found between an opportunistic atmosphere and safeguarding or spill-over contracts. This could be explained by the phenomenon that it is hard to agree on difficult arrangements in a hostile or low trust atmosphere. Because of a non-cooperative atmosphere partners may not be able to reach a thorough agreement and end up with a contract that is less specific on the safeguarding aspects than desired.

Uncertainties due to external circumstances such as difficulties with the protection of knowledge (e.g. because it is codified) or the potential costs of unwanted knowledge transfer

(costs of technological development) also influence the way in which contracts are perceived and drawn up. The easier knowledge can leak out, the stronger respondents perceive their contract as a safeguard against opportunism. Surprisingly, this does not result in a change in the content of the contract. The contract's content is different though if the costs of technological development are high and hence the potential loss due to loss of knowledge would be high. With these circumstances, contracts are more complete and focus on spill-over and safeguarding arrangements (also a weak positive correlation with the commitment contract is found that would be significant at a 90% confidence level).

In short, whereas the relationship atmosphere is reflected in the perceived meaning of a contract, the correlation between atmosphere and the content of a contract is weak. The fact that these correlations are weak (and in an opportunistic atmosphere actually absent) is not considered very problematic in this specific analysis since there are many other factors that influence the type of arrangements made. For example, the type of project, project importance, project costs, the involvement of legal advisors and the company's experience with - and routine use of - contracts will all influence contractual behaviour alongside whether predominantly trust or fear of opportunism is present. With hindsight on these additional influencing factors, the outcome of the analysis is considered to be an important indication that there is a relationship between relationship atmosphere, the perceived meaning of a contract, and the content of the contract. After all, the contract's meaning and content would be expected to reflect the atmosphere to some extent, and atmosphere would not be expected to be the explanatory variable for the contract's content. To find out more about the relationship between the relationship atmosphere, and the meaning and content of the contract, further analysis should be made based on the types of contract that have now been distinguished.

As with atmosphere, uncertainty due to difficulties with knowledge protection, or high costs of technological development, is not related to the content of the contract. The only relationship found is between the costs of technological development and the completeness of contracts (spill-over, safeguarding and, to lesser extent, commitment arrangements).

> ***Outcome with regard to hypothesis C4:*** *The findings from the correlation analysis partly confirm hypothesis C4 that different contract contents can be found in different atmospheres and that contracts can thus be interpreted as a reflection of the relationship they represent. Although the perceived meaning of contracts confirmed this expectation, the factual content of contracts only partly confirmed this expectation. External uncertainties due to spill-over and high costs of technological development primarily result in more complete, rather than different contracts.*

> ***Outcome with regard to hypothesis C5:*** *From the correlation matrix it can also be concluded that there is no correlation between the atmosphere in which a relationship evolves and contract completeness. This confirms to the hypothesis that a trusting atmosphere is not negatively related to contract completeness, but to the contract's content (commitment contract).*

The sixth hypothesis on contracts stated that active use of the contract and intensive monitoring would increase the level of conflict and would be detrimental to a trusting atmosphere. Hence it

would decrease the technological and relational success of the IOR. To test this hypothesis respondents were asked whether:

1. The contract had been actively used (after it had been drawn up) to govern the relationship (contract use), or;
2. the contract had been adapted over the course of time (contract adaptations).

Whereas the questions on contract use and adaptation were not specific with regard to which partner had actually used or changed the contract, monitoring was measured for both the respondent and the partner firm. This was done because monitoring by ego (the respondent) is more likely to the *result* of conflict and an opportunistic atmosphere, whereas monitoring by the partner firm will more likely be the *cause* of ego's perception of conflict and an opportunistic atmosphere. Also the relationship with IOR success has this duality. Whereas relationship success will likely be the *cause* of ego's decreased need for monitoring, monitoring by the partner firm will likely negatively *affect* relational success (higher levels of monitoring leading to occurrence of conflict and decreased IOR success). With the correlation analysis the cause-effect direction cannot be derived, only the relatedness of the different variables can be examined. In the interpretation of these relationships, the dualistic interrelatedness between the variables should be kept in mind. The results of the correlation analysis are presented in Table 7.13.

		Destructive conflict	Trusting atmosphere	Technological success	Relationship quality
Contract use	Pearson correlation	**.220****	**-.163****	.005	**-.118***
	Significance	.000	.001	.925	.021
	N	391	391	351	380
Contract adaptations	Pearson correlation	.077	**-.107***	-.023	-.070
	Significance	.128	.035	.666	.176
	N	391	391	351	380
Monitoring by the partner firm	Pearson correlation	.085	**-.152****	**-.112***	**-.109***
	Significance	.092	.003	.036	.033
	N	391	391	351	380
Monitoring by the respondent firm	Pearson correlation	**.490****	**-.503****	**-.201****	**-.405****
	Significance	.000	.000	.000	.000
	N	391	391	351	380

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

Table 7.13Correlation between contract use and relationship characteristics.

From the correlation analysis it can be seen that active use of contract and monitoring, influences the relationship characteristics. If the relationships are analysed using significance, strength and sign of

the relationship, it can be concluded that most correlations are significant, show the expected sign, but are weak. Only monitoring by the respondent firm has a strong correlation with the relationship characteristics (although the correlation with technological success is weak). This result can be interpreted as meaning that in relationships characterised by a low level of conflict, a trusting atmosphere and relational success (satisfaction about partner firm, positively developing relationship), the respondent firm perceives less need to monitor.

Monitoring by the partner firm is weakly negatively correlated to a trusting atmosphere, and technological and relational success. Active use of the contract has a positive correlation with destructive conflict and correlates negatively with trusting atmosphere and relational success. This result should be interpreted in a circular fashion with contract use being both a cause and the result of conflict. No correlation was found between contract use and the technological success of the relationship.

Adaptations in the contract have virtually no relationship with IOR characteristics. Only a weak negative correlation is found with trusting atmosphere. The fact that most correlations are weak is not considered problematic in this analysis since the use of the contract will only be a small factor in determining the atmosphere of a relationship and IOR success. More important, for this analysis, was the question whether the expected relationships could be recognised at all (significance) and whether they had the expected positive or negative sign.

> ***Outcome with regard to hypothesis C6:*** *In the correlation analysis, support is found for hypothesis C6 that active use of contract is positively correlated to higher levels of conflict. In turn, higher levels of conflict are correlated to higher levels of monitoring by the respondent firm. Intensive monitoring by both the partner and the respondent firm are negatively correlated to a trusting atmosphere, technological and relational IOR success, although the cause-effect relationship is likely to be reversed (monitoring by partner as the cause, monitoring by respondent as the effect of relationship characteristics.*

7.6 The effect of asymmetric dependence on IOR development and success

The hypotheses concerning the meaning of mutual and asymmetric dependence in IOR development centred around the influence of asymmetric dependence on relationship atmosphere and contract use. To test the different hypotheses, first an operationalisation was made of IOR dependence and the relationship atmosphere. In an IOR for the development of new products and/or technologies, dependence may be comprised of different factors. To examine this, dependence was divided into relative dependence on information, financial resources, the partner's access to new markets and customers, the relative size of loss of the partner if the relationship would be terminated, and asset specificity. The measures of dependence are relative except for asset specificity. The relative measures are found by reducing the dependence of the respondent (ego) by the dependence of the partner (alter). A negative score indicates that the respondent is less dependent on its partner than vice versa. A positive score indicates that the respondent is relatively dependent. The operationalisation is based on Nooteboom et al. (1997).

Variable	Definition	Items	Alpha
Relative dependence ego	The total relative dependence of the respondent on its partner based on complementary technological knowledge, access to new customers and markets, access to financial resources, and the size of loss if the IOR would be stopped	1. Our partner supplied us with important information on new technologies 2. We supplied our partner with important information on new technologies 3. Our partner gave us access to new customers and markets which was very important to us 4. We gave our partner access to new customers and markets which was very important to them 5. For us, this partner represented an important financial resource 6. For our partner, we represented an important financial resource 7. Without this partner the project could not have been executed 8. Our partner would not have been able to complete the project without our help	1-2 + 3-4 + 5-6 + 7-8
Dependence asymmetry	The degree of unbalance in the dependence between partners	1. The score of relative dependence of ego, irrespective of the sign (recall that a negative score indicated asymmetric dependence by alter and a positive score indicated dependence by ego)	
Asset specificity	Whether investments are redeployable without loss of productive value	1. For the project with our partner, we needed custom made machinery and instruments 2. We can also use this specific machinery for projects with other partners	$\alpha = 0.80$

Table 7.14Operationalisation of dependence and asset specificity.

In the operationalisation of dependence almost no use is made of scales. Initially the different forms of dependence were designed to form a scale together. When the dependence scale was computed though, the different forms of dependence appeared not to be related and did therefore not form a scale (Cronbach alpha = 0.30). This could be explained because it is not illogical that a respondent could be technologically dependent on its partner without needing the partner's financial resources or access to new customers. Therefore dependence was focused on as a relative variable and evaluated by comparing the respondent's dependence with that of its partner. Asset specificity though was measured as a scale. Its Cronbach alpha score was good ($\alpha = 0.80$).

Based on this operationalisation a correlation analysis was made to test hypotheses D1 that asymmetric dependence negatively influences a trusting atmosphere and stimulates an opportunistic atmosphere, and that mutual dependence has the opposite effect. To test this relationship a correlation matrix was made between the degree of asymmetric dependence in the

relationship and the level of affect based trust, habituation, openness, trusting and opportunistic atmosphere. The results are shown in Table 7.15.

		Affect based trust	Openness in relationship	Habituation	Trusting atmosphere	Opportunistic atmosphere
Dependence asymmetry	Pearson corr.	**-.153****	-.034	-.009	**-.106****	**.221****
	Significance	.003	.506	.858	.037	.000

** Correlation is significant at the 0.01 level (2-tailed), n=388

Table 7.15The relationship between dependence and atmosphere.

If the results are examined using the three criteria concerning significance, strength and sign of the relationship, some of the relationships are significant, and their signs are in line with expectations, but the linear relationship between the variables is weak. Conform hypothesis D1, asymmetric dependence is negatively correlated to affect based trust and a trusting atmosphere whereas it is positively correlated to an opportunistic atmosphere. In this specific analysis, cause and effect relationships can be assumed because a relationship atmosphere will be unlikely to influence the level of dependence between partners (although is might influence the perception of dependence). Hence it seems valid to assume that the correlations measured are the result of asymmetric dependence rather than the other way around. Although the weak correlations do not justify strong conclusions, the results can be seen as an indication of the relationship between asymmetric dependence and relationship atmosphere.

No relationship was found between asymmetric dependence, and openness and habituation. This might imply that respondents, in general, believe that open communication is possible between partners that are asymmetrically dependent and that also habituation can be achieved. The findings do support the basic argument that asymmetric dependence is detrimental to a trusting atmosphere and increases the likelihood of an opportunistic one.

> ***Outcome with regard to hypothesis D1:*** *The results, in part, provide support for hypothesis D1 that asymmetric dependence negatively influences affect based trust and a trusting atmosphere, and positively influences an opportunistic atmosphere. No support is found for a negative relationship between asymmetric dependence and openness and habituation.*

The second hypothesis concerning the relationship between the specific asymmetric dependence of the respondent firm, the room for opportunism by the partner firm, and the level of defensive behaviour, monitoring and conflict is tested in Table 7.16.

		Opportunism by alter	Defensive behaviour	Monitoring ego	Destructive conflict
Relative dependence ego	Pearson correlation	**.154****	**.161****	**.151****	**.215****
	Significance	.002	.001	.003	.000

** Correlation is significant at the 0.01 level (2-tailed), n=391

Table 7.16Relationship between dependence and an opportunistic atmosphere.

> ***Outcome with regard to hypothesis D2:*** *From the correlation analysis support is derived for hypothesis D2. As was expected, asymmetric dependence by the respondent leads to increased opportunism by the partner firm. It is hence not surprising that the dependent respondent shows more defensive behaviour, pays more attention to monitoring of the partner firm, and experiences a high level of destructive conflict i.e. conflict that harms the relationship.*

The third hypothesis concerning dependence in IOR development stated that asymmetric dependence would increase the use of spill-over and safeguarding contracts. To test this hypothesis a correlation analysis was made between dependence asymmetry and the type of contract used. The results of this analysis are presented in Table 7.17.

		Spill-over contract	Safeguarding contract	Commitment contract	Contract completeness
Dependence asymmetry	Pearson correlation	**.110***	.070	.054	**.113***
	Significance	.030	.166	.287	.026

* Correlation is significant at the 0.05 level (2-tailed), n=388

Table 7.17Correlation between relative dependence and the type and completeness of contracts.

From the results in the correlation matrix it can be concluded that dependence asymmetry has a significant, but weak, positive relationship with the choice of spill-over contracts and contract completeness. The findings do not support the expectation that dependence asymmetry would also increase the use of safeguarding contracts. Apparently, the relatively more dependent partner in a relationship worries more about the potential loss of assets brought into the relationship than about relationship adjustment or breakdown. Considering the negative atmosphere associated with an asymmetric relationship, this is not surprising since partners will likely not care greatly about relationship maintenance and continuation.

The positive correlation between dependence asymmetry and contract completeness is not surprising since it was expected that the more dependent partner would put greater effort into reaching a contractual agreement so as to safeguard its interests with regard to the more powerful partner. The correlation results weaken the expectation that the more dependent partner would not have the bargaining power to enforce a satisfactory level of contractual arrangements. This would have resulted in a lower score on contract completeness. Another explanation could be

that in a situation of mutual dependence less contractual arrangements are needed because there are private ordering mechanisms present that safeguard the relationship.

> ***Outcome with regard to hypothesis D3:*** *These findings confirm hypothesis C3 in that asymmetric dependence increases the use of spill-over contracts. It does not support the expected relationship with safeguarding contracts. Furthermore it is found that asymmetric dependence is related more to complete contracts whereas in situations of mutual dependence contracts are less complete.*

The final hypothesis on dependence stated that asymmetric dependence would decrease IOR success. For the operationalisation of relationship success see Table 7.4. Based on this operationalisation a correlation analysis was made to examine whether asymmetric dependence negatively relates to the technological and relational success of a relationship. The results are presented in Table 7.18.

		Technological success	Relationship quality
Dependence asymmetry	Pearson correlation	-.001	**-.228****
	Significance	.978	.000
	N	349	378

** Correlation is significant at the 0.01 level (2-tailed)

Table 7.18Relationship between asymmetric dependence and IOR success.

The results of the correlation analysis are surprising in that asymmetric dependence negatively relates to relational IOR success but does not have any relationship to the technological success of the partnership. This is surprising because earlier analyses showed that asymmetric dependence hinders the development of a trusting atmosphere (hypothesis C1) and that a trusting atmosphere positively influenced technological success (hypothesis T4).

> ***Outcome with regard to hypothesis D4:*** *As a result of the correlation analysis hypothesis D4 is partly confirmed. Asymmetric dependence does have a negative influence on relational IOR success. However, it does not negatively (or positively) relate to the technological success of the relationship.*

7.7 Conclusions on trust, dependence and contract

In the table below, the results from the quantitative data analysis are summarised by comparing the results with the formulated hypothesis. To make clear which parts of a hypothesis were confirmed, the parts of the hypothesis that were rejected in the analysis are stricken through and placed between brackets.

Hypotheses and findings related to trust	Confirmed?
T1: Trust can be distinguished into trust propensity, cognition and affect based trust.	Yes
T2: A high trust propensity decreases defensive behaviour and conflict, and increases the relational (~~and technological~~) success of a relationship.	Partly
T3: Cognition based trust is both a cause and the result of a relational (~~and technological~~) success of the relationship. (It also decreases defensive behaviour, monitoring and conflict, and increases openness, however, to a lesser extent than affect based trust)	Partly
T4: Affect based trust is both a cause and the result of a high level of openness, relational and technological success, and a low level of (~~defensive behaviour,~~) opportunism, monitoring and conflict.	Partly
T5: Habituation is both a cause and the result of a high level of openness, relational and technological success, and a low level of (~~defensive behaviour, opportunism,~~) monitoring and conflict.	Partly

A distinction between the different forms of trust could be clearly seen from the factor analysis. Habituation was more difficult to distinguish and was closely related in content and function to affect based trust. Also the specific functions of the different forms of trust in IOR development and success could be recognised. The most important function of a high trust propensity, is related to cooperative behaviour due to decreased defensive behaviour. This attitude leads to less conflict and greater relational success.

The most important function of cognition based trust, is that, because of earlier knowledge of the partner, less defensive behaviour and conflict occurs. Higher levels of openness and relational success are found to relate to cognition based trust, although the relationships are not strong.

It is important to note that a very strong relationship was found between affect based trust and various relationship characteristics. Higher levels of affect based trust strongly relate to higher levels of openness, relational and technological success. Furthermore, it is strongly negatively related to the occurrence of conflict and monitoring. It relates less strongly, but significantly, to the propensity towards opportunism (i.e. if affect based trust is present, respondents tend to be loyal to their partner and refrain from opportunism). Habituation has a similar effect on IOR characteristics. Since it is (like cognition based trust) not based on mutual feelings, it does not relate (also like cognition based trust) to the respondent's propensity towards opportunism/loyalty.

Hypotheses and findings related to contract	Confirmed?
C1: Contracts can have two (complementary) interpretations in IOR development: (1) they can reflect trust and commitment to the relationship (commitment contract) and, (2) they can be installed to safeguard against opportunism (safeguarding contract). Additionally, a spill-over contract can be distinguished.	Yes
C2: A commitment contract will predominantly include arrangements directed towards the setting of goals and the ways of achieving them (investments, project plan, project management).	Yes
C3: A safeguarding contract will predominantly include arrangements directed at ways to safeguard the relationship from opportunism (conflict resolution, relationship adjustment and termination). The additionally found spill-over contract includes arrangements aimed at the protection of spill-over (pledge of secrecy, product and knowledge ownership).	Partly
C4: Commitment contracts reflect relationships with a high level of trust whereas safeguarding contracts reflect of relationships where fear of (~~opportunism or~~) unwanted knowledge transfer prevalent.	Partly
C5: A trusting atmosphere is not negatively related to contract completeness. Instead, it is related to the contract's content, being aimed at goals setting and realisation (commitment contract).	Yes
C6a: Active use of the contract increases the level of conflict and is detrimental to a trusting atmosphere and (~~technological and~~) relational success.	Partly
C6b: Intensive monitoring increases the level of conflict and is detrimental to a trusting atmosphere and technological and relational success.	Yes

The analysis on the different types of contract and their link with relationship characteristics are valuable conclusions in this thesis. The results do not only sometimes contradict current theories on the relationship between trust and contract, they also offer an alternative explanation of this relationship that is based on both theory and empirical findings from the qualitative cases and quantitative data. In traditional economic thinking contracts are seen as strictly legalistic documents that serve to safeguard opportunism. In this thinking, attempts to cope with trust in economic exchange led to the argument that trust could substitute for contract because fear of opportunism was relieved (Bradach & Eccles 1989, Zaheer & Venkatraman 1995). Both contract and trust were considered to have a similar function i.e. reducing the fear of opportunism. Because opportunism was at the centre of the argument, and contracts and trust were interpreted as reducing opportunism, emphasis on contracts could also be interpreted as a sign that opportunism was feared, and could hence evoke distrust (Bradach & Eccles 1989, Nooteboom 1996).

In this thesis significant indications have been found that a trusting atmosphere is negatively related to opportunism but that this does not make safeguards unnecessary nor lead to an absence of, or less complete, contracts. Rather, three different types of contract were distinguished and two alternative interpretations of contracts.

1. A commitment contract was found to be related to a trusting atmosphere. It serves to lay down goals for the relationship and ways of achieving them. Its interpretation in an IOR tends more towards a sign of trust and commitment than towards a contract as a safeguard against opportunism.
2. A safeguarding contract serves as a written document to guide and safeguard the IOR process. It include arrangements concerning relationship adjustments, conflict resolution and possible relationship termination. The safeguarding contract can be found in both trusting and opportunistic atmospheres.
3. A spill-over contract serves to safeguard the tacit and tangible assets brought into the relationship. This type of contract is closely related to fear of opportunism and is mainly found in situations where the risk of unwanted knowledge transfer is high and costly (i.e. the costs of technological development are high).

The choice of a certain type of contract does not influence IOR development and success. Active use of contracts and intensive monitoring, however, are negatively related to IOR development and success. The more problems that occur in a relationship, the more use will be made of contracts and monitoring to try to defend one's own interest. In this way a negative spiral is created in which unsatisfactory performance and behaviour evokes use of the contract and monitoring and this, in turn, evokes defensive and non-cooperative behaviour. As a result, the likelihood of both relational and technological success is reduced.

Hypotheses related to dependence	Confirmed?
D1: Asymmetric dependence negatively influences affect based trust, (~~habituation and openness~~) (trusting atmosphere) and stimulates an opportunistic atmosphere, whereas mutual dependence has the opposite effect.	Partly
D2: If a party is asymmetrically dependent on its partner, the stronger partner will have more room for opportunism. As a result the weaker party will show more defensive behaviour, pay more attention to monitoring and experience more conflict.	Yes
D3: Asymmetric dependence increases the use of spill-over (~~and safeguarding~~) contracts. Additionally it was found that asymmetric dependence increases contract completeness.	Partly
D4: Asymmetric dependence negatively influences the relational (~~and technological~~) success of the relationship, whereas mutual dependence stimulates it.	Partly

Dependence in high technology environments was shown not to be primarily based on asset specific investments. Rather dependence was based on complementary technological knowledge, financial resources or access to new customers and markets. If the balance of dependence between partners was asymmetric, this was detrimental to IOR development. Due to dependence asymmetry, the more dependent partner experiences more fear of opportunism and conflict and reacts to this by showing more defensive behaviour and monitoring. Irrespective of who is the more dependent partner (the respondent or the partner firm) asymmetric dependence leads to an opportunistic atmosphere in which spill-over and extensive contracts are used to safeguard experienced risks. Technologically the project can become successful, irrespective of the relative

dependence between partners. To achieve this success will, however, be more difficult because the relationship quality (relational success) is negatively influenced by asymmetric dependence. Since project execution takes place in a more hostile or fearing atmosphere, more effort has to be put into overcoming defensive behaviour and conflicts. Hence it is unlikely that the best results will be obtained in an asymmetric relationship. Symmetric dependence has been shown as a basis on which affect based trust can grow and problems can be jointly solved (less conflict).

In short, the results of the data analysis are very satisfactory. The distinction of the different forms of trust offers an enriched insight into the content as well as the function of trust in IOR development and success. The effect of asymmetric dependence on trust development and contracting behaviour is now better described. And, the distinction between the different forms of contract offers additional insights into the interrelatedness between trust, dependence and contract. It is concluded that in more trusting atmospheres, both the perception and content of contracts will be different. This implies a rejection of current theories that state that trust would make contracts unnecessary and implies a confirmation of the alternative hypothesis that stated that it is not contract completeness but the contract's content that should be focused on when investigating the relationship between trust and contract.

8

Conclusions and notes for further research

"... contract between totally isolated, utility maximising individuals is not contract, but war; contract without language is impossible; and contract without social structure and stability is - quite literally - rationally unthinkable, just as man outside society is rationally unthinkable (Macneil 1980:1)".

8.1 Introduction

In this thesis the role of trust, dependence and contract were examined in the development and success of interorganisational relationships in a high technological setting. High technology IORs are characterised by large uncertainty concerning external and project developments, complexity of technology and project management, and by great interdependence on each other's knowledge and capabilities. This implies significant risks for both the individual firm and the group of firms that executes the project. These risks will mostly manifest themselves over the course of time as the project is executed. These risks can, to an extent, be dealt with in contracts, ex ante by taking them into account, ex post by applying sanctions. However, because of the highly uncertain nature of technological innovation, contracts will be hard to specify ex ante, and if sanctions are used ex post, conflict may result rather than constructive problem solving. Therefore, contracts cannot solely be relied on in high technology IORs. Rather, partners should be motivated to jointly solve their problems. Mutual dependence and envisaged joint opportunities form the strongest motivation to solve problems and enable relationship continuation. However, to enable constructive problem solving trust is necessary to achieve an atmosphere in which this can be done. To examine the role that trust, dependence and contract play in IOR development and success the following research questions were formulated:

Question 1: How do interorganisational relationships develop over time?

Question 2: What role do trust, dependence and contract play in interorganisational relationship development?

Question 3: How do trust, dependence and contract influence the relational and technological success of the relationship?

In order to answer these questions a three-step method was used. First, a longitudinal case study was conducted emphasising the IOR development process and the role of trust, dependence and contract in this process. Secondly, seven additional cases were examined to test the earlier findings and further explore the interactions between trust, dependence and contract. Thirdly, the case study findings were tested in the quantitative analysis of 391 IORs. Before the research started, the theoretical point of departure was determined. The theoretical expectations served as a framework for guiding the empirical research. They also served as the end point in the sense that, in this last chapter, the empirical findings are confronted with the theoretical expectations. In this way the contribution to the different theories applied in this thesis can be determined.

8.2 Theoretical point of departure

The theoretical point of departure in this thesis was based on transaction costs theory. Weaknesses in the framework were: 1) the limited attention to social aspects, 2) the limited applicability of the framework in a technological setting and 3) the static nature of the framework. Therefore, the works by a number of authors were discussed that tried to add trust and dynamics to the TCE framework and discussed its applicability in a technological setting. Major lessons that were derived from that literature are summarised below.

Trust as part of human nature alongside opportunism: Different authors stressed trust as part of human nature in addition to opportunism. They state that discrete transactions do not exist because of their relational elements (Zaheer & Venkatraman 1995) and their embeddedness in society (Macneil 1980). People still reason according to the 'laws' of discrete exchange though, i.e. reciprocity and equity. The basis for economic exchange is not predetermined, but can be changed by establishing close relationships between actors through the process of socialisation (Ouchi 1980). In the socialisation process, trust is established, and this makes it possible to leave contracts partly unspecified because actors trust each other to cope with the 'contractual holes' in a way that is acceptable to them.

Value of trust in uncertain technological context: Both Ouchi (1980) and Bradach & Eccles (1989) describe the value of trust relationships in an uncertain or technological setting. Trust is, in this context, seen as an alternative authority mechanism that enables a leap beyond the expectations that reason and experience alone would warrant. This is because trust can become a norm of obligation that can make parties behave in a trustworthy way out of fear for their reputation, or because trust can form a sentiment of friendship that keeps parties together out of goodwill (Bradach & Eccles 1989).

The effect of trust on IOR development and success: Where Bradach & Eccles (1989) argue that trust increases the efficiency of relationships, reduces the risk of opportunism and makes contracts unnecessary, Anderson & Narus (1990) add that trust leads to functional rather than destructive conflict. Both Bradach & Eccles and Zaheer & Venkatraman (1995) argue that because trust reduces opportunism, safeguards become unnecessary. This leads to a decrease in transaction costs and thus make IORs more efficient.

Dependence & contract: The different authors emphasise dependence as a traditional transaction costs concept but also as a mechanism related to the social side of a relationship. Anderson & Narus (1990) emphasise that dependence is not only an economic fact but also a subjective interpretation of a situation. Furthermore they observe that dependent firms experience more conflict because they have greater interest in sustaining the relationship and hence have to compromise more than the more powerful partner(s). Macneil (1980) confirms this observation by stating that the asymmetry determines the room for negotiation (bargaining position) in contractual relationships.

IORs as a process: In addition to the importance of trust in economic exchange in general and in high technology settings in specific, the importance of a dynamic analysis of IORs was stressed. Anderson & Narus (1990), in this respect, argue that the past and the future are important in understanding the complex processes of relationship development. Zaheer & Venkatraman (1995) argue that dynamics are essential for the analysis of the complex relationships between social and economic ordering mechanisms in IORs. Nooteboom (1996) further stresses the circularity of the interrelatedness between social, private and legal ordering mechanisms and relationship development. Ring & Van de Ven (1994) presented a model with which the circular dynamics of IOR development could be described.

After having established the theoretical foundation on which the analysis of IORs could be based, including trust, the empirical research began. In each of the three empirical stages, the research questions were addressed: 1) how do IORs develop over time, 2) what influence do trust, dependence and contract have on this development and 3) how do these relate to IOR success.

8.3 Question 1: Interorganisational relationship development

Because different authors had stressed the importance of a dynamic analysis of IORs, the first research question focused on how interorganisational relationships develop over time. From literature these developments were expected to be circular (Nooteboom 1996) in a sense that the ordering mechanisms (trust, dependence, contract) and IOR development would be strongly interrelated (Zaheer & Venkatraman 1995, Anderson & Narus 1990). Both the past and the future were expected to be of crucial importance (Anderson & Narus, 1990). In the model of Ring & Van de Ven (1994) a framework was found to describe these developments and investigate how IORs develop over time. Furthermore it provided leads for the second research question on the specific roles of the ordering mechanisms in this process. The process model was applied to eight longitudinal case studies.

The resulting case analyses were mainly of a descriptive nature but also have their implications for the way in which IORs are envisaged in theory. From the qualitative description of the IOR developments it can be concluded that both the past and the desired future play an important role. *Past experience* (or reputation) plays an important role since partners are chosen based on this experience. *Future expectations* are important to determine individual and joint goals and to examine their compatibility. Based on knowledge from the past, and wishes for the future, parties enter into a *negotiation phase*. In this phase, the first real interactions take place. First

impressions or reputations can be altered, and individual goals can be changed based on new perspectives that arise when parties start to discuss their joint possibilities. If this process progresses well, in both business (joint interests) and personal (mutual trust) senses, an agreement can be reached and commitments can be made. In the *commitment phase*, agreements can lead to written contractual arrangements or worth of mouth agreements. When commitments are made, irrespective of what form, execution of the project can be started. In the *execution phase*, partners really get to know each other personally and businesswise. Expectations can be met or not, which will have an effect on competence and goodwill trust, and which can form the basis for habituation. Furthermore, a joint past is built, upon which future, or intensified cooperation can be based.

When the IOR process is in the execution phase, the developments become harder to describe according to the stages as distinguished in the model. As discussed in chapter 1, the innovation process is uncertain. This implies that parties have to negotiate on a continuing basis, execute part of the project, renegotiate whether this is the right way to continue etc.. For the analysis of the process this means that negotiations, commitments and executions occur in different orders, can occur simultaneously, and can take place on different levels varying from the strategic to the operational level.

What becomes clear from the dynamic analysis of interorganisational relationships, is that IORs cannot be seen as a static form of governance that is determined only by certain exchange characteristics. Rather, interorganisational relationships are dynamic processes in which exchange characteristics and social factors can constantly change. As a result of these changes, changes also occur in the different ordering mechanisms (i.e. the balance of dependence is altered, the level of trust decreased). Whereas this refers to unconscious changes, conscious changes can also be made in the ordering mechanisms to actively govern the relationship (i.e. consciously restrict the level of dependence, build up a good level of trust). If IORs are seen in this light, the static form of governance as prescribed in transaction costs economics is no longer central (e.g. trilateral governance supported by a neo-classical contract). Rather the dynamic use of the ordering mechanisms trust, dependence and contract should be placed in the core of the analysis.

In short, the process analysis confirms the expectations described in theory. The observed dynamic relationships between the ordering mechanisms and IOR development underscore the importance of seeing IORs in a dynamic way and of focussing on circular dynamics rather than on simple linear cause-effect relationships.

8.4 Question 2 & 3: The role of trust, dependence and contract

The second and third research questions focused on the role of trust, dependence and contract in IOR development, and on their influence on relational and technological success. In the literature discussed in chapter 2 the importance of trust alongside the traditional transaction costs factors of private and legal ordering (i.e. dependence and contract) was stressed, as well as its influence on IOR developments and success.

Trust was expected to (1) increase openness and joint problem solving (Anderson & Narus 1990, Zand 1972), (2) to decrease defensive behaviour (Zand 1972), destructive conflict (Anderson & Narus 1990) and opportunism (Bradach & Eccles 1989), and (3) to decrease the need for safeguards because of the decreased risk of opportunism (Zaheer & Venkatraman 1995) and make contracts unnecessary (Bradach & Eccles 1989).

Asymmetric dependence was associated with conflict because the more dependent partner was expected to have less bargaining power (Macneil 1980) and hence experience more conflict (Anderson & Narus 1990). Trust was expected to decrease the resistance to such asymmetric dependence, i.e. increase the willingness to become vulnerable (Zand 1972).

Contracts were expected to become unnecessary in high trust relationships because of reduced opportunism (Bradach & Eccles 1989, Zaheer & Venkatraman 1995) and because trust would form a norm of obligation and goodwill (Bradach & Eccles 1989). Explicit attention to contracts could even sow distrust (Bradach & Eccles 1989, Nooteboom 1996).

From the empirical analysis of the eight qualitative case studies and the quantitative analysis, it can be concluded that trust, dependence and contract play equally important, but different, roles in IOR development and success. Furthermore, the ordering mechanisms are strongly interrelated and can undermine or reinforce each other. Their functions are discussed below.

Trust

Trust, in its different forms, can have different effects on IOR establishment and development. Parties with a higher trust propensity will because of their cooperative business culture, have more chance of successful relationships than their distrustful counterparts. Cognition based and competence trust form the basis on which parties enter into a cooperative project with a specific partner. Because parties already know what they can expect from each other, the start of the relationship will be more fluent and the chances of relational success are higher. On this basis friendly relations can be established, but only if fear of opportunism due to asymmetric dependence does not nullify the development potential for affect based trust. In a situation of mutual dependence, affect based trust can more easy develop and form the basis of goodwill trust and loyalty. Affect based trust can be envisaged as the 'rubber band' in a relationship. Whereas relationships characterised by the absence of trust will likely break when conflicts arise, affect based trust forms the basis on which open negotiations and joint problem solving can take place. As a result of open communication and joint problem solving, both the chance of relational IOR success and of technological success are higher. In joint problem solving the function of trust lies its significant added value. Whereas dependence and cognition based trust may form the basis for cooperation and can result in a relational as well as in a technological success, affect based trust has a much stronger influence than these two factors. The conclusion that is drawn from this observation is that in relationships with a high level of affect based trust, relationships can develop in a very satisfactory and friendly manner, and the technological success of the projects can exceed the average level of success.

Dependence

Asymmetric dependence can be considered as the natural enemy of affect based trust. Whereas dependence on a jointly exploitable business opportunity, or on specialist technological knowledge, is a basic condition for entry into, or continuation of a relationship, asymmetric dependence can ruin the potential of such a relationship. Asymmetric dependence hinders the development of affect based trust because of fear of opportunism, due to the more dependent party's weak bargaining position. This results in defensive behaviour, intensive monitoring of the partner firm, destructive conflict and an opportunistic atmosphere. In such conditions the chances of relational success are low. A working relationship is still possible though. From both the case studies and the quantitative analysis it can be concluded, that despite asymmetric dependence and an opportunistic atmosphere, projects can still be completed and be fairly successful. This can be explained by the fact that because of strong dependence, partners may have no other choice than to continue the relationship. Because the chances of relational success are low, the IORs are not likely to be continued into the future nor lead to above average project outcomes.

Furthermore, in situations of asymmetric dependence, contracts are unlikely to provide a basis for constructive conflict resolution. Because of its limited bargaining power, the more dependent partner cannot enforce contractual arrangements unless the case is taken to court. However, if court resolution is sought as a form of ultimate appeal, the relationship will no longer be open for constructive conflict resolution or relationship continuation.

Contracts

Considering the previous, the value of contracts should not be seen in their function of ultimate appeal. One of the most important findings of this thesis is that contracts can have different functions and contents, and that they are not only static legalistic documents, but also underpin the dynamic developments between partners. Three types of contract have been distinguished:

1. *Commitment contracts* can be understood as consolidating the developed trust and commitment between partners. This type of contract focuses on the formulation of goals and ways of achieving them. They will contain arrangements for goals, investments and duration of the relationship, and operational guidelines (project plan, project management) for project execution.
2. *Safeguarding contracts* can be understood as providing safeguards for the relationship. This type of contract focuses on the risks accompanying a relationship in joint technological development. It contains arrangements for accountability and for possible conflict resolution and relationship adjustments or termination.
3. *Spill-over contracts* are closely related to the traditional perception of a contract i.e. the safeguarding of interests and the prevention of unwanted knowledge transfer or opportunism. These contracts will contain arrangements for property rights of knowledge, products, and processes. It is aimed at protecting that what the individual parties have brought into the relationship.

Not only were different types of contract distinguished, also different uses of contract were found in different IOR atmospheres. In a trusting atmosphere, contracts tend more towards the commitment contract and focus less on spill-over arrangements. The reason for this probably lies in the reduced fear of opportunism. However, higher levels of trust do not lead to less complete, or to the complete absence of contracts, only their content is different.

In an opportunistic atmosphere, respondents perceive their contracts to have a safeguarding function but this cannot always be recognised in the contract's content. High spill-over risks and high costs of technological development, do lead to more complete contracts with a slight emphasis on spill-over and safeguarding arrangements.

Whereas the contract's content and completeness 'only' passively reflects relationship characteristics, actual use of contracts actively influences IOR development. Active contract use to redirect the relationship, or to intensively monitor a partner firm, increases the chance of conflict increases, deteriorates a trusting atmosphere, and decreases the chance of relational and technological IOR success.

The analysis of trust, dependence and contract in IOR development and success, partly confirms and partly adds to the literature discussed in chapters 2 and 3. The discussion on trust adds to the literature by confirming the different forms of trust already distinguished in the literature, and by addressing their specific function in the dynamic analysis of IOR. Because of the dynamic approach it can be concluded that whereas high trust propensity and cognition based trust form a basis for cooperation, and are sufficient conditions for relational IOR success, it is mainly affect based trust that can lead to an above average relational and technological IOR success.

The analysis also partly confirms and partly adds to the expectations with regard to the interrelatedness of trust and dependence. The expectation that trust would decrease the resistance to dependence was confirmed by the observation that a high trust propensity and cognition based trust reduced a party's tendency towards defensive behaviour. Also support was found that asymmetric dependence negatively influences the relationship. In situations of asymmetric dependence, affect based trust is difficult to establish, and opportunism and conflicts are more likely to arise.

The interrelatedness between trust and contract diverges from theoretical expectations. Instead of confirming the expectation that higher levels of trust would lead to less complete contracts, it was found that trust is related to the specific content, rather than the completeness of contracts. In other words, high trust relationships are supported by different types of contracts than low trust relationships, and contracts are, in such contexts, interpreted in a different way (not primarily safeguarding but with a guidance function). The distinction of the three different types of contract and their use in different IOR atmospheres, offer a rich potential for further analysis.

8.5 Contribution to theory

The desired contribution of this thesis to the body of knowledge is formulated below and is subsequently discussed in further detail. This thesis should:

- Add to the development of transaction costs theory by bringing trust and dynamics into the TCE framework;
- test the TCE framework in a technological setting, a setting for which the theory is considered inappropriate;
- add to the discussion on the content of trust, and its function in economic exchange relationships;
- add to the dynamic theories by testing and adjusting the developed models of IOR development.

Reflections on transaction costs economics

Transaction costs economics proved to be applicable in a dynamic setting provided emphasis was not placed on the static form of governance, but on the dynamic use of private and legal ordering. The concept of social ordering proved to be an valuable addition to the theory. This can, to a great extent, be explained by the nature of the relationships examined. Because of their highly uncertain nature, high tech IORs are not primarily focused on cost minimisation since in the uncertain innovation trajectories, cost-benefit calculations cannot be easily made. Rather they focus on opportunities and ways of exploiting them. Likewise, dependence is not primarily experienced due to asset specificity, but is much more based on perceived joint opportunities and on unique complementary knowledge and know-how that cannot be obtained from another partner.

The inclusion of trust and dynamics form a valuable addition to the transaction costs framework, especially in a high technology setting as was already shown in the papers discussed in chapter 2. This thesis builds on these contributions and mainly adds to the richness of the theory in understanding IOR development and governance in a dynamic sense. By applying transaction costs economics in a dynamic way by focussing on its ordering mechanisms, the theory offers many leads for understanding and explaining IOR development and success. Transaction costs concepts that are less applicable in a high technological context are transaction specific investments and contracts as strictly legalistic documents.

The content and function of trust

Whereas the role of trust in economic interaction has long been acknowledged in social exchange theory and by other researchers, the exact content and function of trust are still being debated. This thesis provides additional insights into the trust debate by using and operationalising the different forms of trust as already distinguished in earlier literature, and by analysing the distinct functions in IOR development and success. Because the function of trust is analysed alongside the other mechanisms of trust, dependence and contract, the limitations and drawbacks of trust can also be determined.

IOR dynamics

In the earlier discussions, the importance of viewing IORs as a dynamic process was stressed instead over viewing IORs a static forms of governance. This partly conflicts with traditional transaction costs thinking that aims to prescribe an optimal form of governance given the exchange characteristics of a relationship. Although the expected TCE forms of governance were sometimes recognised in the case studies, their application proved to be rather static when considering the dynamic developments in the relationships. More solid leads were found in the ordering mechanisms as provided by transaction costs economics and social exchange theory. The focus on trust, dependence and contract, and on IOR dynamics, offered a sound theoretical framework for analysing IOR development and success.

8.6 Contribution to practice

This thesis does not contain definitive guidelines for policy makers and managers[22], but does contribute to practice in an indirect way. A major aim of the study was to emphasise the process characteristics of interorganisational relationships and to provide insights into the mechanisms that govern their dynamic development. Both managers and policy makers can obtain leads from the description and analysis of these ordering mechanisms. If they understand the mechanisms behind cooperative technological innovation, they may become better able to manage or support these relationships. Examples of such insights can be found in the distinction between the different forms of trust. Companies can use this knowledge when choosing a partner, or they can consciously pay attention to establishing trust in their relationships. Policy makers can pay more attention to the function of trust in their external communication to companies, or provide room in their support programmes for the development of trust. For example, by stimulating parties to organise informal events (to stimulate affect based trust) or company visits (to stimulate cognition based trust).

The distinction between the different forms of contract can also be used in practice. Whereas the emphasising of contracts might sow distrust when parties conceive contracts as a safeguard against opportunism, emphasising the commitment function of contracts might help parties to achieve both trust and a solid contractual basis for cooperation. Conscious choices on the form of governance can lead parties to include arrangements for third party mediation. This could save the relationship in case of trouble and can prevent parties from seeking court resolution as their ultimate (and irreversible) appeal.

Awareness of the detrimental effect of asymmetric dependence could make companies avoid such unbalanced relationships. If an unbalanced relationship is established, policy makers could stimulate partners to make the more dependent partner the project champion. In this way some of its dependence can be compensated for by project leadership.

[22] A practical guide for partner choice and IOR establishment has been written in Dutch and is published under the title 'Winnen kan ook samen' (Klein Woolthuis 1999).

8.7 Notes for further research

From the different research methods used, uniform indications are derived that trust can be distinguished into different forms and that contracts can be distinguished into different types. The distinction between different forms of trust is not new to recent literature, but their operationalisation is still problematic. In this thesis, the classification of trust centred around trust propensity, affect and cognition based trust. However, affect and cognition based trust were, in theory and in the case studies, also described as the basis for goodwill and competence trust. Habituation was distinguished as a separate, but related, concept to trust.

The operationalisation of the different trusts proved to be difficult. Cognition based and competence trust, for example, are closely related and hence are difficult to exactly distinguish. The same problems are met in the operationalisation of affect based, and goodwill trust. Moreover, both cognition and affect based trust can result from an earlier relationship, which is however predominantly used for operationalising cognition based trust. Hence, future research should build on the existing operationalisation but also reconsider some of the choices made. The main objective should be to construct new scales that combine the source (affect/cognition) and object (goodwill/competence) of trust, and that can distinguish habituation from these forms of trust.

The findings concerning the different contents and functions of contracts in IOR development, give rise to additional research questions, and questions concerning their operationalisation. Now different contract contents have been recognised, further refinements could be made to strengthen the distinction between different contracts and learn more about the interpretation of the different contents in IOR development. Therefore, a more precise operationalisation should be made, distinguishing between more than 13 contractual arrangements and being more explicit about the possible interpretation of the individual arrangements.

Based on the acquired quantitative data, additional research should be carried out to examine the influence of the different ordering mechanisms on IOR characteristics and success. In the process of writing this thesis, initial attempts were made to use LISREL to estimate their influence. However, due to a lack of time, this analysis could not be completed. Testing of the relationships in formal models would, however, be very useful in further examining and testing the findings established so far.

Summary

In this thesis the roles of trust, dependence and contract are examined in the development and success of interorganisational relationships in a high technological setting. High technology IORs are characterised by high uncertainty with regards to external and project developments, complexity of technology and project management, and by great interdependence on each other's knowledge and capabilities. This implies high risks for both the individual firm as the group of firms executing the project. These risks will mostly manifest themselves over the course of time. These risks can to some extent be dealt with in contracts, ex ante by taking them into account, ex post by applying sanctions. However, because of the highly uncertain nature of technological innovation contracts will be hard to specify ex ante, and ex post use of sanctions will deteriorate the current and future potential of the relationship. Therefore, the partners should rather jointly solve their problems. Mutual dependence forms a strong motivation to do so. Trust is, however, an important additional force to enable successful problem solving, since it stimulates openness and acceptance of a partner's influence. To further examine the role that trust, dependence and contract play in IOR development and success the following research questions were formulated:

Question 1: How do interorganisational relationships develop over time?

Question 2: What roles do trust, dependence and contract play in interorganisational relationship development?

Question 3: How do trust, dependence and contract influence relational and technological success of the relationship?

In order to answer these questions a three step-method was used. In the first stage emphasis was placed on the first two research questions.

The development stages of interorganisational relationships

The longitudinal case study of TIMP (a network established to exploit the growing market for home care and rehabilitation equipment) was used to explore IOR dynamics and to examine the influence of trust, dependence and contract on this process. For the analysis of the IOR

dynamics a process model was applied, based on which IOR developments were described as being initiated by prior experience and future expectations, and evolving through recurrent stages of negotiation, commitment and execution of agreements.

Prior experience: Previous experience with each other was of crucial importance for the first contacts between partners. Together with knowledge about each other's reputation, and the recommendations by third parties, it increased the willingness for cooperation.

Future expectations: The TIMP members were selected based on their complementary knowledge and capabilities ranging from product design to market research and sales. Based on perceived future opportunities, that could only jointly be exploited, the parties decided to start serious negotiations on the establishment of a formalised network.

Negotiations: In the negotiation phase formal negotiations centred around joint goals and ways of achieving them. Negotiations were held on the establishment of a formal structure and on basic rules on how cooperation should progress. At the same time, the negotiation phase served as a period in which partners got to know and trust each other. A common language was created and trust was built. This included both the affection side of trust (care, concern, goodwill) and the cognitive side trust (knowledge of, and trust in, competencies).

Commitment: When the parties reached the commitment stage, they were all pointed in the same direction and commitments could be laid down in a contract. The contract reflected the developments that the parties had already gone through. It reflected trust in each other and in the joint cooperation.

Execution: For project execution groups of two or three firms were formed based on a combination of business complementarity, prior experience, and developed trust. However, problems always occurred during project execution because of unexpected contingencies or disappointing performance by one or more partners. When partners were not able to solve these problems together, trust could be broken. In these unsuccessful relationships, defensive behaviour and conflict could occur which made joint problem solving increasingly difficult and discouraged relationship continuation after the project had been finished. In relationships where projects progressed well, competence and goodwill trust could be further developed, which stimulated relationship continuation and success.

The roles of trust, dependence and contract in IOR development

After the process of IOR development had been described, the influence of trust, dependence and contract on IOR development was analysed.

Trust: In general the effect of trust on TIMP developments was positive. As partners increasingly got to know each other, trust grew and stimulated openness and constructive cooperation. However, not only positive effects were observed. Unwanted side-effects arose since openness also stimulated airing dissatisfaction and distrust. As a result, built-up trust could easily break down, thereby turning constructive discussion into destructive conflict. Likewise, habituation in general increased relationship efficiency, but too close informal and habitual relationships, were considered to lead to inefficiencies due to non-punctual behaviour.

Dependence: Although both successful and unsuccessful relationships between firms coexisted in the network, the network as a whole continued to function. Because all the parties were connected to each other through the formal network, the break-up of one relationship could be compensated by another good relationship and hence cohesion could be preserved. An important factor that kept parties together was the perceived dependence on the network and on its members. Greatest dependence was experienced by the engineering companies that were hired by the project champion. When project involvement appeared to be lower than expected and promised, some partners got disappointed and frustrated, which led to an outbreak of conflict and a breakdown of trust. However, the perception of conflict differed greatly between parties. It was only experienced by the dependent, and not by the more powerful, partners. To reduce their dependence, and thereby their source of frustration, the more dependent companies started initiating their own projects and new business opportunities. In this way more balanced relationships were established.

Contract: Whereas in the first phases the contract of the general TIMP network was interpreted as reflecting trust and commitment, this changed when conflicts arose. In order to defend their individual interests, the more dependent engineering companies pleaded for rules that would oblige the sales companies to outsource project work to TIMP members. This led to additional contractual arrangements that would enable the use of sanctions if parties would, against their plans, not involve TIMP members in project execution. From this analysis, two functions of contracts can be distinguished; first contracts can reflect trust and commitment, secondly a contract can serve as a safeguard to defend individual interests.

The description and analysis of the TIMP case mainly provides answers to the first two research questions. The description of TIMP developments over time, and the description of critical incidents reveal how interorganisational relationships can develop over time. Although other IORs may develop in different ways, important indications can be derived about how relationships may develop. By studying the functions of trust, dependence and contracts in the TIMP development, important pointers are derived for answering the second research question on the role of trust, dependence and contract in IOR development. The findings underscore the importance of distinguishing trust into its different elements, but introduce questions on the exact content and meaning of dependence and contracts in relationship to trust and IOR development. These questions were further examined in the additional case studies in stage 2.

IOR developments in different atmospheres

From the TIMP case it was concluded that relationships may develop in different ways. Determining elements of a positive development were trust and mutual dependence, leading to trusting atmosphere. Asymmetric dependence could trigger a negative development by evoking dissatisfaction, distrust and conflict, leading to an opportunistic atmosphere.

In these differing atmospheres, contracts were found to have different meanings. In a trusting atmosphere contracts were found to reflect trust and commitment. In decreasingly trusting relationship atmospheres, characterised by fear of opportunism, and doubt about the other's intentions, parties started designing additional contractual arrangements for safeguarding

their interests. In this context, the contract reflected fear of opportunism and concern for own-interest protection.

To further examine IOR development and the different functions of contracts and dependence in different atmospheres, seven cases were selected. Four distinct situations were distinguished to illustrate IOR development, and the roles of contract and dependence, in different atmospheres:

1. A trusting atmosphere in which partners were asymmetrically dependent;
2. a trusting atmosphere in which partners were mutually dependent;
3. an opportunistic atmosphere in which partners were asymmetrically dependent;
4. an opportunistic atmosphere in which partners were mutually dependent.

In these four situations an additional distinction was made between those partners that made use of (rather) complete contracts and those that had barely drawn up any contractual arrangements. How the process of cooperation evolved will be described below.

Process: As in the TIMP case, most relationships built on previous experience with each other, which provided a neutral to trusting atmosphere for relationship establishment. In some cases, mutually positive behaviour (e.g. friendly negotiations, strong commitment, joint problem solving) strengthened trust and mutual commitment, improving the basis for cooperative behaviour. In other cases, the initial neutral to positive atmosphere quickly changed when individual interests changed and dominated common interests, or when unexpected contingencies discouraged relationship continuation for one or more of the partners. In these situations, mutual dependence shifted towards asymmetric dependence, which led to conflict, a lack of joint problem solving and loyalty, and hence to and opportunistic atmosphere or a breakdown in the relationship.

The roles of trust, dependence and contract in different atmospheres

How trust, dependence and contract influenced the way in which the relationships developed, will be addressed below.

Trust: From the case studies it can be concluded that trust plays a very important role in IOR development. Knowledge about another party, based on previous experience (in which competence trust was built), led parties to engage in relationships. If relationships developed well, through mutual and repetitive loyal and cooperative behaviour, affect based trust developed and this, in turn, stimulated loyalty and joint problem solving (goodwill trust). However, goodwill trust proved to be fragile in situations of increasing asymmetric dependence. When individual business interests started to dominate joint interests, conflict and defensive behaviour started to dominate openness and joint problem solving. Hence, the trusting atmosphere between partners was broken and the relationship shifted towards an opportunistic atmosphere.

Dependence: Dependence also played an important role in relationship development. As with competence trust, dependence formed a basis on which partners decided to engage in, and continue, a relationship. Most important to the success of the relationship was the balance of dependence between the partners. Mutual dependence formed a solid basis for cooperation on

which trust and growing interdependence could be built. In cases characterised by asymmetric dependence, trust building proved to be difficult because of increased fear of opportunism. As a result, conflicts occurred and parties started to pursue their own interests without caring about joint, or their partner's, interests.

Asymmetric dependence also led to difficulties with the establishment of contracts. Since it led to a weak bargaining position of the more dependent party, contracts could become 'unfair' in a sense that the dependent party's interests would be insufficiently specified and protected. Although asymmetric dependence was often accompanied by great relational friction, it did not make technological success impossible. To escape such a situation, many parties started to search for alternative partners and/or business opportunities to decrease their dependence. In one case study the opposite was observed. In this case, a partner's one-sided loyalty, based on goodwill from prior successful cooperation, led to hesitance to change partners despite opportunistic use of his dependence.

Contract: Whereas, based on transaction costs theory, the high technology projects, with their occasional (and highly complex/uncertain) nature and mixed or idiosyncratic investments, were expected to be governed on the basis of trilateral governance supported by neo-classical contracts, in practice unclear governance structures were found supported by very incomplete and/or unstructured contracts. To a great extent the absence of the expected governance structures can be ascribed to 'bad' management practices. However, it can also be ascribed though to the fact that companies used alternative mechanisms to govern their relationships such as trust. The most important finding, though, is that contracts and trust do not relate to each other in an either-or fashion. In the cases examined, the completeness of contracts did not differ in trusting and opportunistic atmospheres. Rather it was found that trust could form the basis for detailed contracting. These contracts resembled detailed project plans and can be interpreted in a similar way as the commitment contract as already distinguished in the TIMP case. As in the case of trust, in an opportunistic atmosphere contracts were not more complete, but rather more focused on safeguarding arrangements. This resembled the safeguarding function of contract as observed in the TIMP case.

What also became clear from the case studies, is that the two functions of contract do not exclude each other, they can well complement each other. Based on the observations, though, it is expected that contracts that tend more towards the commitment contract reflect more trusting relationships, whereas contracts that include more safeguarding arrangements, reflect lower trust relationships.

Whether the different types and functions of contract, the different forms and effects of trust, and the influence of mutual versus asymmetric dependence, can be recognised in a large sample of IORs, is examined in the final stage.

The influence of trust, dependence and contract on IOR success

In the final stage, emphasis was shifted away from the dynamic IOR developments and emphasis was placed on trust, dependence and contract and their influence on IOR characteristics and success. Building on theory and on the findings from stages 1 and 2, hypotheses were formulated

and tested in a large population of high technology IORs. A telephone survey was conducted among 391 respondents that were, or had recently been, involved in high technology projects.

Trust: The hypotheses on trust centred around the different forms of trust and their specific influence on IOR development and success. Habituation was distinguished as a distinct concept. From the quantitative analysis it was concluded that trust propensity, affect and cognition based trust, and habituation, cannot only be recognised in 'real life' situations, such as the TIMP case, they are also clearly distinguishable in the large sample of IORs investigated. This strengthens the belief that trust can be operationalised and measured to examine its exact function in IOR development. From the quantitative analysis on the influence of trust on IOR developments, and success, the following conclusions were drawn:

Trust propensity decreases the level of defensive behaviour. Because people have a more cooperative attitude they are better able to achieve a good, satisfactory relationship. However, it does not increase the likelihood of technological success. *Cognition based trust* increases the willingness to cooperate and stimulates openness and relational success. It decreases the likelihood of defensive behaviour and conflict. However, it does not increase the likelihood of technological success. *Affect based trust* is the only form of trust that increases the chance of technological success. Moreover, affect based trust has a much stronger positive effect on IOR development and success than have a high trust propensity, cognition based trust or habituation. It stimulates openness, joint problem solving and relational and technological success. It decreases the perceived need for monitoring, opportunism and conflict. Overall, *habituation* has the same, though weaker, effects on IOR development and success as affect based trust has. The only difference is that habituation is more procedural and hence does not decrease a partner's propensity to opportunism, whereas affect based trust does decrease opportunism and increases loyalty.

Contract: The hypotheses on contracts centred around the different functions and contents of contracts in different IOR atmospheres. The quantitative analysis therefore focused on whether the different types of contracts could be recognised, and whether the choice for a certain type of contract was related to the relationship atmosphere.

The contents of the contract: From the quantitative analysis it was concluded that different contract types could be recognised. Additionally to the already hypothesised safeguarding and commitment contract, a spill-over contract was recognised. From a factor analysis of 13 contractual arrangements, the following contents of contracts could be derived.

Commitment contract	Safeguarding contract	Spill-over contract
1. Goal and outcomes of the relationship 2. Duration of the relationship 3. Investments by all parties (human, material and financial resources, knowledge) 4. Project plan (with sequential steps) 5. Project management (championship, communication, monitoring and control)	1. Accountability for risks (internally as well as external to possible customer) 2. Licence agreement 3. Arrangement for relationship adjustments or termination 4. Arrangement for conflict resolution (e.g. involvement of third party)	1. Pledge of secrecy 2. Ownership of product and/or technology 3. Ownership of method 4. Patent rights

The contents of these contracts, and their functions in IOR development and success are as follows:

1. The *commitment* contract, which focuses on setting goals and ways of achieving them, is predominantly used in trusting atmospheres. In such an atmosphere, people perceive their contracts to be primarily a consolidation of trust and commitment, hence focus more on commitment type of arrangements.
2. The *safeguarding* contract, which is aimed at safeguarding but also at managing the relationship, can be found in opportunistic as well as in trusting atmospheres. Its function should be interpreted as managing the uncertain IOR process, rather than as safeguarding only individual interests and the assets brought into the relationship.
3. The *spill-over* contract had not been recognised in the case studies but can be explained by distinguishing the risks of opportunism and of spill-over. Opportunism refers to the conscious choice to let individual interests prevail over common ones, irrespective to the harm done to a partner. Spill-over can happen accidentally and does not necessarily involve opportunistic intentions. If fear of unwanted knowledge transfer is present, spill-over contracts are expected since they safeguard the material and immaterial assets brought into the cooperation. The quantitative analysis confirms the expectations. Spill-over contracts are predominantly used when the costs of technological developments are high (and hence the costs of spill-over and project failure are high) and when fear of opportunism is present.

The distinction between the different types of contract enables the testing of the hypothesis that trust relates to the specific content, rather than completeness of contracts. From the quantitative analysis it can be concluded that contract completeness does not differ in different atmospheres. As was expected, the contents of the contract used in different atmospheres does vary. In other words, the expectation derived from theory (chapter 2 and 3) that higher levels of trust would enable less complete contracts is rejected. The alternative explanation of contracts (chapter 5 and

6) finds more support; contracts have different contents and functions, and can as such be interpreted as a 'mirror' of the relationship.

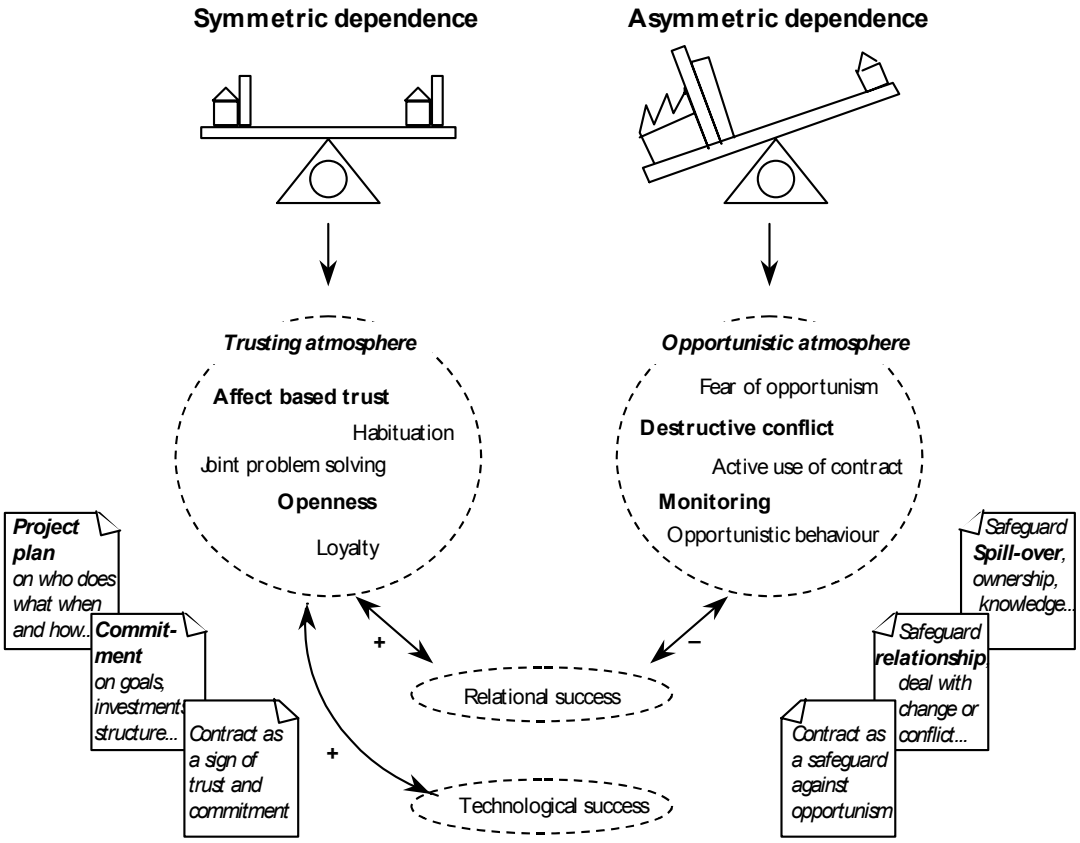
Dependence: The hypotheses on dependence centred around the effect of asymmetric dependence on relationship characteristics and success. Furthermore, since the different forms of trust, and types of contracts have been recognised, their relationship with asymmetric dependence could be examined in greater detail.

From the quantitative analysis it can be concluded that asymmetric dependence has a negative effect on the relationship atmosphere. It stimulates the development of an opportunistic atmosphere in which defensive behaviour, monitoring and conflict prevail. It is mainly the more dependent partner that experiences a high level of conflict and that tries to react to its weak power position with defensive behaviour and by monitoring. In such situations, affect based trust is absent. The dominating fear of opportunism and opportunistic atmosphere, is reflected by the use of predominantly spill-over, and more complete contracts. The opposite can be seen in relationships of mutual dependence. Here affect based trust can flourish and, because mutual dependence implies possibilities of private alongside legal ordering, contracts can remain less complete.

Although asymmetric dependence increases the likelihood of opportunism and conflict, and hence decreases the chances of relational success, it does not influence the level of openness, nor the possibility of developing habituation. Furthermore, it does not decrease the likelihood of technological success. This leads to the conclusion that asymmetric relationships are less successful in a relational sense, i.e. conflicts and relationship problems may hinder smooth IOR development. However, this does not imply that projects cannot be successful in a technological sense. Apparently, projects can be brought to a good ending, irrespective of the smoothness of the relationship.

In order to provide a simple overview of the main findings of this thesis, the picture was drawn that is provided below. Note that this picture does not present causal relationships. Rather it gives a 'loose' impression of the observed influence of trust, the balance of dependence, and contract, in IOR development and success.

In the picture, the left hand side reflects positive IOR developments in a trusting atmosphere. Such a development will most likely occur in a situation of mutual dependence, and is characterised by affect based trust, openness, habituation, joint problem solving and loyalty. Contracts can form the consolidation of these developments and can serve as a guideline for project execution (commitment contract), and as a guide for the uncertain IOR trajectory (safeguarding contract). The combination of mutual dependence, trust, and constructive use of contracts, increases the chances of relational as well as technological success. Success, in turn, strengthens the positive developments, and so a positively reinforcing development can be achieved.



The right hand side reflects negative IOR developments in an opportunistic atmosphere. Asymmetric dependence can evoke such developments, characterised by opportunism, monitoring, conflict and active use of contracts. In these circumstances partners predominantly use contracts to safeguard their interests and investments by focussing on spill-over arrangements and by drawing up as complete as possible contracts. The combination of asymmetric dependence and an opportunistic atmosphere, strongly decreases the chances of relational success. However, in a situation of asymmetric dependence, openness and habituation can still be achieved and the chances of technological success are not decreased (this is only decreased by the absence of affect based trust). Hence, technological success is always in reach, but will easier and more pleasantly be achieved, in situations of mutual dependence and a trusting atmosphere.

Of course, the picture overemphasises the two extremes that may be found. In most interorganisational relationships, both trust and opportunism will be found, and relationships might shift forth and back between the different atmospheres. However, from the description of the extremes, the general tendencies in relationship development and success in different atmospheres can be derived.

Appendix: Case protocol TIMP

1 The interorganisational relationship

- Number of partners and partner characteristics
- Goal of the cooperation
- Relationship characteristics (vertical, horizontal, long or short-term, intensity, etc.)
- Level of (inter) dependence and dominant coalitions
- Risk taking – Profit – Ownership (product/ method etc.)
- Contractual arrangements
- Previous exchange / relationship history (cognition based trust)
- Future expectations (goals, complementarity)
- The development of relationships through stages of:
  - Negotiation
  - Commitment
  - Execution
- Relationship development based on:
  - Trust
  - Dependence
  - Contracts
- Relationship termination or continuation (how and why)

2 The company

- Name and date of establishment
- Industry and core activity
- Individual goals in and contribution to the network
- Number of employees and company growth
- The relative investment in the cooperation
- Power position in the network:
  - Superiority technology
  - Superiority financial assets
  - Superiority market access
- Outcome of the cooperation:
  - Products / patents / technologies
  - Market access
  - Quality and sustainability of the relationships

3 The environment

- Industry
- Pace of technological developments
- Government interference (subsidy)

References

Anderson J.C. and Narus J.A. 1990. 'A model of distributor firm and manufacturer firm working partnerships', *Journal of Marketing*, Vol.54:42-58.

Arrow K.J. 1974. *Essays in the theory of risk bearing*, Amsterdam: North Holland.

Axelrod R. 1984. *The evolution of cooperation*, Basic Books: New York.

Axelson B. & Easton G. (eds.) 1992. *Industrial networks: A new view of reality*, Routledge: London.

Best M.H. 1990. *The new competition: Institutions of industrial restructuring*, Polity Press: Cambridge.

Bidault F. & Cummings T. 1994. 'Innovation through alliances: Expectations and limitations', *R&D Management*, Vol. 24, No.1.

Blau P.M. 1964. Exchange and power in social life, John Wiley & Sons, New York

Blomqvist K 1994. 'Trust in technology partnerships - Context and conceptual issues', *Nordic Workshop on Interorganisational Research*, Aalborg.

Blomqvist K 1995. 'The concept of trust: an interdisciplinary literature review and analysis', *Research Report*, Lappeenranta University.

Boer H. & During W.E. (forthcoming). 'Innovation. What innovation? – A comparison between product, process and organisational innovation', *International Journal of Technology Management*.

Boersma M. F. 1999. *Developing trust in international joint ventures*, Labyrint Publications: Capelle a/d IJssel.

Bradach J.L. & Eccles R.G. 1989. 'Markets versus hierarchies: from ideal types to plural forms', in: Scott W.R. (ed.) *Annual review of Sociology* 15:97-118, Palo Alto, Annual Reviews Inc.

Brytting T. 1993. 'Spontaneity and systematic planning in small firms - a grounded theory approach', *International Small Business Journal* 9 (1): 45-63.

Burrell G. & Morgan G. 1979. *Sociological paradigms and organisational analysis*, Ashgate Publishing co.: Hants (UK).

Burt R.S. 1987. 'Social contagion and innovation: Cohesion vs. structural equivalence', *American Journal of Sociology*, 92: May.

Cainarca G.C., Colombo M.G. & Mariotti S. 1992. 'Agreements between firms and the technological life cycle model: Evidence from information technologies', *Research Policy* 21:45-62.

Chiles T.H. & McMackin J.F. 1996. 'Integrating variable risk preferences, trust, and transaction cost economics', *Academy of Management Review* 21 (1):73-99.

Coase R.H. 1937. 'The Nature of the Firm', *Economia N.S.*, 4 (4): 386-405.

Commandeur H.R. 1994. *Strategische samenwerking in netwerkperspectief, een theoretisch raamwerk voor industriële ondernemingen*, Haveka: Alblasserdam.

Commandeur H.R., Moerman P.A. & Taal P. 1989. 'Ontwikkelingen van industriële netwerken, in: Boekema & Kamann (eds.) *Sociaal economische netwerken*, Wolters-Noordhoff: Groningen.

Commons J.R. 1934. *Institutional economics*, University of Wisconsin Press: Madison.

Contractor F.S. & Lorange P. 1988. *Cooperative strategies in international business*, Lexington Books: Massachusetts.

Davis J.A. 1971. *Elementary survey analysis*, Prentice-Hall: New Jersey.

Denzin N.K. 1970. *The research act: A theoretical introduction to sociological methods*, Aldine Publishing Cooperation: Chicago.

Denzin N.K. 1970b. *Sociological methods: A sourcebook*, Aldine Publishing Cooperation: Chicago.

Denzin N.K. 1978 *Sociological methods: A sourcebook (2nd ed.)*, McGraw-Hill: New York.

Deutsch M. 1958. 'Trust and suspicion', *Journal of conflict resolution*, 2: 265-279.

Deutsch M. 1973. *The resolution of conflict*, Yale University Press: New Haven.

Dollinger M.J. 1990. 'The Evolution of Collective Strategies in Fragmented Industries', *Academy of Management Review* 15 (2): 266-285

Dore R. 1983. 'Goodwill and the spirit of market capitalism', *British Journal of Sociology*, 34: 459-482.

Douma M. 1994. 'Strategische samenwerking: Fit of falen', *Holland Management Review* 41: winter.

Douma M. 1997. *Strategic alliances: Fit or failure*, Drukkerij Elinkwijk: Utrecht.

During W.E. 1984. *Innovatieproblematiek in kleine industriële bedrijven*, Twente University.

Emerson R.M. 1972. 'Exchange theory, Part II: Exchange relations and networks', in: Berger J., Zelditch M. & Anderson B. (eds.) *Sociological theories in progress*, 2: 58-87, Houghton Mifflin: Boston.

French J.R.P. & Raven B. 1959. 'The bases of social power', in: Cartwright D. (ed.) *Studies in social Power*, University of Michigan Press: 150-167.

Fukuyama F. 1995. *Trust: The social virtues and the creation of prosperity*, The Free Press: New York.

Galbraith J.R. 1973. *Designing complex organisations*, Addison-Wesley: Reading (MA).

Gambetta D. 1988. *Trust: Making and breaking co-operative relation*, Basil Blackwell: Oxford.

Gaski J.F. 1984. 'The theory of power and conflict in channels of distribution', *Journal of Marketing*, 48: 9-29.

Gibb J.R. 1961.'Defensive level and influence potential in small groups', in: Petrillo L. & Bass, B.M. (eds.) *Leadership and Interpersonal Behavior,* Holt, Rinehart Winston: New York: 66-81.

Gibb J.R. 1964. 'Climate for Trust Formation', in: Bradford L.P., Gibb, J.R. & Benne K.D. (eds.) *T-Group Theory and Laboratory Method*, John Wiley: New York: 279-301.

Goshal S. and Moran P. 1996. 'Bad for practice: A critique of the transaction cost theory', *Academy of Management Review*, 21 (1):13-47.

Granovetter M.S. 1973. 'The strength of weak ties', *American Journal of Sociology*, 78 (6): 1360-1381.

Granovetter M.S. 1985. 'Economic action and social structure: The problem of embeddedness', *American Journal of Sociology*, 78: 481-510.

Gulati R. 1995. 'Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances', *Academy of Management Journal*, 38 (1): 85-112.

Håkansson H. 1987. *Industrial technological development: A network approach*, Croom-Helm: Stockholm.

Håkansson H. 1989. *Corporate technological behaviour, cooperation and networks*, Routledge: London.

Harnett D.L. & Murphy J.L. 1985. *Statistical analysis for business and economics* (3rd edition), Addison-Wesley: Reading, Massachusetts.

Hellriegel D., Slocum jr. J.W. & Woodman R.W. 1992. *Organisational behaviour*, West Publishing Company: St.Paul.

Hirshman A.O. 1984. 'Against parsimony: Three easy ways of complicating some categories of economic discourse', *American Economic Review*, 74: 88-96.

Hunt S.D. & Nevin J.R. 1974. 'Power in a channel of distribution: sources and consequences', *Journal of Marketing Research*, May 11:186-193.

Jacquemin A. 1987. *The New Industrial Organisation*, Oxford.

Jacquemin A. 1991. 'Cooperation in Research & Development and European Competition Policy', in: De Wolf P. (ed.) *Competition in Europe*, Kluwer Academic Publishers: Deventer.

Jick T.D. 1979. 'Mixing qualitative and quantitative methods: Triangulation in Action', *Administrative Science Quarterly*, 24: 602-611.

Jong G. de, 1999. *Causal loops in long-term supply relationships – Theory and evidence from the United States, Japan, and Europe*, Labyrint Publications: Capelle a/d IJssel.

Klein Woolthuis R.J.A. & Hillebrand B. 1998. 'Bringing trust and dynamics into the analysis of inter-organizational relationships', *EGOS conference*, Maastricht: June.

Klein Woolthuis R.J.A. 1994. 'Improving innovative capability trough inter-firm networks', doctoral thesis, Erasmus University Rotterdam.

Klein Woolthuis R.J.A. 1996. 'Entrepreneurial activity through inter-organizational relationships - A longitudinal approach to relationship development', *Research in Entrepreneurship and Small Business Development (RENT X)*, Brussels.

Klein Woolthuis R.J.A. 1998. 'How entrepreneurial networks can succeed - Cases from the region of Twente', in: Oakey R. & During W.E. (eds.) *New Technology-Based Firms in the 1990's Volume IV*, Paul Chapman: London.

Klein Woolthuis R.J.A. 1999. 'Sleeping with the enemy - About trust and dependence in inter-organizational relationships in a technological setting', in: Oakey R. & During W.E. (eds.) *New Technology-Based Firms in the 1990's Volume VI*, Prentice Hall: London.

Klein Woolthuis R.J.A. 1999. *Winnen kan ook samen*, Ministerie van Economische Zaken, Afdeling Voorlichting.

KPMG 1996. *Alliance networks & Virtual Organisations*, KPMG.

Larson A. 1991. 'Partner Networks: Leveraging External Ties to Improve Entrepreneurial Performance', *Journal of Business Venturing*, 6:173-188.

Larson A. 1992. 'Network Dyads in Entrepreneurial Settings: A study of the governance of exchange relationships', *Administrative Science Quarterly*, 37:76-104

Luhmann N. 1979. *Trust and Power*, John Wiley & Sons: New York.

Luhmann N. 1988. 'Familiarity, confidence, trust: Problems and alternatives', in: Gambetta D. (ed.) *Trust: Making and breaking co-operative relations*, Basil Blackwell: Oxford.

Lush R.F. 1976. 'Sources of Power: Their impact on intra channel conflict', *Journal of Marketing Research*, 13: 382-390.

Macauley S. 1963. 'Non-contractual relations in business: A preliminary study', *American Sociological Review*, 28: 55-67.

Macneil I.R. 1978. 'Contracts: Adjustment of long-term economic relations under classical, neo-classical, and relational contract law', *North-western University Law Review* 72: 854-905.

Macneil I.R.1980. *The new social contract: An inquiry into modern contractual relations*, Yale University Press: London.

Manna M. La, & Norman G. 1992. *The New Industrial Economics: Recent Developments in Industrial Organisation, Oligopoly and Game Theory,* Elgar Aldershot.

Mayer R.C., Davis J.H. & Schoorman D.F. 1995. 'An integrative model of organisational trust', *Academy of Management Review*, 20 (3): 709-734

McAllister D.J. 1995. Affect- and cognition-based trust as foundations for interpersonal cooperation in organisations', *Academy of Management Journal*, 38 (1): 24-59.

Mintzberg H. 1979. The structuring of organisations, Prentice-Hall, Englewood Cliffs (N.J.).

Mønsted M. 1998. 'Strategic alliances as an analytical perspective for innovative SMEs', in: Oakey R. & During W.E. (eds.) *New Technology-Based Firms in the 1990's Volume IV*, Paul Chapman: London.

Nooteboom B. 1994. *Management of partnerships*, Academic Services: Schoonhoven.

Nooteboom B. 1996. 'Trust, Opportunism and Governance: A process and control model', *Organization Studies*, 17 (6):985-1010.

Nooteboom B. 1999. *Inter-firm alliances: Analysis and design*, Routledge: London.

Nooteboom B., Berger H. & Noorderhaven N.G. 1997. 'Effects of trust and governance on relational risk', *Academy of Management Journal*, 36: 794-829.

Nooteboom B., Berger, J. & Noorderhaven, N.G., 1995. 'Sources, measurement and effect of trust in the governance of buyer-supplier relations', Paper for the EMOT workshop, Geneva, 1-3 December.

OECD 1992. *Technology and the Economy, The Key Relationships*, Paris.

Organ D.W. & Konovsky M. 1988 'Cognitive versus affective determinants of organisational citizenship behaviour', *Journal of Applied Psychology*, 74: 157-164.

Ouchi, W.G., 1980. 'Markets, Bureaucracies and Clans', *Administrative Science Quarterly*, 25 (1): 129-143.

Penrose E.T. 1959. *The theory of the growth of the firm*, Oxford University Press: Oxford.

Piore M.J. & Sabel C.F. 1984. *The Second Industrial Divide: Possibilities for Prospensity*, Basic Books: New York.

Porter L.W., Lawler E.E. & Hackman J.R. 1975. *Behaviour in organisations*, McGraw-Hill: New York.

Pouder R. & St.John C.H. 1996. 'Hot spots and blind spots: Geographical clusters of firms and innovation', *Academy of Management Review*, 21 (4): 1192-1225

Powell W. & Smith-Doerr L. 1994. 'Networks and Economic Life', in: Smelser N.J. & Swedberg R. (eds.) *The Handbook of Economic Sociology*, Sage: New York.

Powell W. 1990. 'Neither Market nor Hierarchy: Network Forms of Organisations', *Research in Organisational Behaviour*, (12): 295-336.

Pyke F., Becattini G. & Sengenberger W. 1992. *Industrial districts and interfirm cooperation in Italy (2nd ed.)*, International Institute for Labour Studies, Geneva.

Ring P. Smith & Van de Ven A.H. 1994. 'Developmental processes of cooperative interorganisational relationships', *Academy of Management Review*, 19 (1): 90-118.

Rothwell R. 1989. 'Small Firms, Innovation and Industrial Change', *Small Business Economics*, 1: 51-64.

Rothwell R. 1991. 'External Networking and Innovation in Small and Medium Sized Firms in Europe', *Technovation*, 11 (2): 93-112.

Rothwell R. 1992. 'Successful Industrial Innovation: Critical Factors for the 1990s', *R&D Management*, 22 (3).

Shapiro S.P. 1987. 'The social control of impersonal trust', *American Journal of Sociology*, 93: 623-658.

Strauss A. & Corbin J. 1990. *Basics of qualitative research: grounded theory procedures and techniques*, Sage Publications: Newbury Park.

Thompson J.D. 1967. *Organisations in action*, McGraw-Hill: New York.

Vidich A.J. & Shapiro G. 1970. 'A comparison of participant observation and survey data', in: Denzin N.K. (ed.) *Sociological methods: A sourcebook*, Aldine Publishing Cooperation: Chicago.

Wilkinson I.F. & Kipnis D. 1978. 'Interfirm use of power', *Journal of Applied Psychology*, 63 (3): 315-320.

Williamson O.E. 1975. *Markets and Hierarchies: Analyses and Antitrust Implications*, Free Press: New York.

Williamson O.E. 1983. *Markets and Hierarchies: Analyses and Antitrust Implications (2nd Edition)*, Free Press: New York.

Williamson O.E. 1985. *The economic institutions of capitalism: Firms, markets, relational contracting*, The Free Press: New York.

Williamson O.E. 1991. 'Strategizing, economising, and economic organisation', *Strategic Management Journal*, 12: 75-94.

Williamson O.E. 1993. 'Opportunism and its critics', *Managerial and Decision Economics*, 14: 97-197.

Williamson O.E. 1996. 'Economic Organisation: The case for candor', *Academy of Management Review*, 21 (1): 48-57

Yin R.K. 1995. *Case Study Research*, Sage Publications: Newbury Park.

Zaheer A. & Venkatraman N. 1995. 'Relational governance as an interorganisational strategy - An empirical test of the role of trust in economic exchange', *Strategic Management Journal*, 16: 373-392.

Zand D. E. 1972. 'Trust and Managerial Problem Solving', *Administrative Science Quarterly*,17 (2): 229-239.

Zucker L.G. 1986. 'Production of trust: Institutional sources of economic structure', in: Staw B.M. & Cummings L.L. (eds.) *Research in organisational behaviour*, 8: 53-112, JAI Press: Greenwich, CT.

Summary in Dutch

Met een ander bedrijf samenwerken aan de ontwikkeling van een nieuw product of een nieuwe technologie kan veel voordelen hebben. Het brengt echter ook veel risico's met zich mee; hoe kan een partij immers zeker weten dat een partner bekwaam en betrouwbaar is. De angst voor het uitlekken van informatie, het bewust misbruiken van informatie of macht, en het eventueel verkeerd inschatten van de bekwaamheden van een partner, zal groot zijn. Voordat men een samenwerkingsverband aangaat, zal men zich dus af moeten vragen of de partner een vriend of een vijand is (of zal worden). De titel "Sleeping with the enemy" verwijst naar deze spannende balans. Om tot succesvolle productontwikkeling te komen moet een partij zijn kennis en kunde met zijn partner delen wat hem kwetsbaar maakt. Tegelijkertijd weet hij nooit of de partner op een loyale en zorgvuldige manier met deze kwetsbaarheid om zal omgaan.

Omdat er altijd enige onzekerheid blijft bestaan over de betrouwbaarheid van een partner, zal een partij over verschillende middelen willen beschikken om zich, in zijn kwetsbaarheid, te beschermen tegen eventueel misbruik van zijn afhankelijk. Hiervoor staan verschillende middelen ter beschikking. In dit proefschrift werd gekeken naar de rol die vertrouwen, wederzijdse afhankelijkheid en contracten spelen in de ontwikkeling en het succes van samenwerkingsverbanden. Uit de longitudinale analyse van 8 samenwerkingsverbanden en een telefonische enquête onder 391 samenwerkende bedrijven werden de volgende rollen van contracten, afhankelijkheid en vertrouwen gedestilleerd.

De rol van contracten in het verloop en het succes van samenwerking

Contracten kunnen dienen om het ontwikkelde vertrouwen tussen partijen vast te leggen en zo een goede basis vormen voor samenwerking. Dit is echter niet de enige betekenis en functie die een contract kan hebben. In de vorm van een projectplan kan een contract de relatie operationeel aansturen en een houvast zijn in de projectuitvoer. Ook kunnen contracten dienen om regelingen vast te leggen voor wanneer zich problemen voordoen. Hun functie is dan om de relatie tegen onverwachte gebeurtenissen zoals conflict en veranderende omstandigheden te beschermen. Als laatste kunnen contracten dienen om eigendomsrechten vast te leggen. In deze functie dienen contracten dat te beschermen (kennis, producten) wat partijen in de relatie inbrengen of ontwikkelen.

Over het algemeen zullen in vertrouwensrelaties contracten meer gericht zijn op wat partijen samen willen bereiken en de manier waarop zij dit gaan doen (doelen, investeringen, projectplan). In relaties waarin minder vertrouwen aanwezig is, zijn contracten meer gericht op het indekken van risico's met betrekking tot de innovatie (eigendom van kennis, product, methode). In zowel vertrouwende en wantrouwende relaties worden afspraken gemaakt voor het in goede banen leiden van de relatie de relatie (conflict oplossing, relatie wijzigingen en eventuele beëindiging).

Omdat in wantrouwende relaties nadruk ligt op de bescherming van eigendom, en in vertrouwende relaties men zich meer richt op het positief formuleren van wat men samen doen wil, kan geconcludeerd worden dat contracten als een afspiegeling van de relatie gezien kunnen worden.

Terwijl de inhoud van contracten dus gezien kunnen worden als een afspiegeling van de positieve of negatieve ontwikkelingen in een relatie, kan het actief gebruik van contracten deze ontwikkelingen beïnvloeden. Actief gebruik van contracten, bijvoorbeeld ten behoeve van het wijzigen van een relatie of voor het 'monitoren' van een partner, heeft een negatieve uitwerking op de relatie. Het vertrouwen wordt erdoor geschaad en conflicten, defensief gedrag en een opportunistische sfeer zijn het gevolg.

De rol van wederzijdse afhankelijkheid in het verloop en het succes van samenwerking

Wederzijdse afhankelijkheid tussen partners vormt een belangrijke voorwaarde voor een goed verloop van een relatie. Door hun wederzijdse afhankelijkheid zullen alle partijen even gemotiveerd zijn zich in te zetten voor een goed relatieverloop. Wanneer de relatie fout zou lopen is de schade voor iedereen immers even groot. Dit neemt de angst voor opportunisme weg, vergroot de mogelijkheden voor het ontwikkelen van vertrouwen en baant zo de weg voor het gezamenlijk oplossen van problemen.

Wanneer er sprake is onevenredige afhankelijkheid, is de kans op een moeilijk verlopende relatie groot. De meest afhankelijke partij heeft de zwakste onderhandelingspositie en zal zich moeten schikken naar de sterkere partner. Omdat de situatie bovendien de sterkere partner de mogelijkheid biedt om zich opportunistisch te gedragen, zal dit bij de afhankelijke partner tot defensief gedrag en frustratie leiden. Het resultaat is dat de kans op conflicten en een destructieve, opportunistische atmosfeer groot is, terwijl het onderlinge vertrouwen vernietigd wordt of niet opgebouwd kan worden.

De rol van vertrouwen in het verloop en het succes van samenwerking

Vertrouwen speelt een belangrijke rol in het succes van samenwerking. Als partners elkaar vertrouwen heeft zowel de relatie als het uiteindelijke resultaat, de innovatie, grotere kans van slagen. De exacte betekenis en rol van vertrouwen had in dit proefschrift speciale aandacht. Niet alleen werden verschillende vormen van vertrouwen onderscheiden, ook werd de invloed van de verschillende vormen van vertrouwen op het samenwerkingsproces besproken. Het initiële

vertrouwen besproken is een basiskenmerk van een bedrijfscultuur. Het bepaalt of bedrijven liever samenwerken dan alles alleen doen, of andersom. Het cognitieve vertrouwen bestaat uit de kennis die partijen hebben opgebouwd over elkaars bekwaamheden. Positieve ervaringen kunnen tot vertrouwen leiden in de kennis en kunde van een partner. Het affectieve vertrouwen wordt in de spreektaal vaak met 'klikken' aangeduid. Het heeft betrekking op de gevoelens die mensen voor elkaar koesteren. Wanneer de samenwerkingspartners het goed met elkaar kunnen vinden, kan het affectieve vertrouwen groeien en ertoe leiden dat partner trouw blijven aan elkaar. Als laatste kunnen partners, in de loop der tijd, zo gewend raken aan elkaars manier van werken, of zich zo goed aangepast hebben aan elkaar, dat de samenwerking vanzelfsprekend wordt. Men is zich dan niet meer bewust van het vertrouwen in elkaar, maar rekent er gewoon op dat alles als vanouds verloopt. Er is dan sprake van habituatie of gewenningsvertrouwen.

Het bewust omgaan met vertrouwen, contracten en de afhankelijkheidsbalans is belangrijk om de relatie te beheersen, maar ook om deze plezierig te houden. Daarbij moet voor ogen gehouden worden dat vertrouwen, afhankelijkheid en contracten niet los van elkaar staan. Zo kan een te sterke afhankelijkheid of het actief gebruik van contracten de vertrouwensrelatie schaden. Aan de andere kant kan vertrouwen juist de weerstand tegen afhankelijkheid verminderen en het makkelijker maken om tot goed gespecificeerde contracten te komen.

Om de rol van vertrouwen, afhankelijkheid en contracten in het verloop en het succes van samenwerkingsrelaties te onderzoeken, werd vier jaar lang een netwerk van bedrijven gevolgd en werden meerdere additionele samenwerkingsverbanden bestudeerd. Hierbij lag steeds nadruk op de ontwikkelingen van de relaties in de tijd, en de invloed van vertrouwen, afhankelijkheid en contracten op deze ontwikkelingen. De cases werden bestudeerd aan de hand van een vooraf ontwikkeld theoretisch raamwerk. Aan de hand van de case analyses werden deze theorieën getest, waarna de proposities aangescherpt konden worden en formele hypotheses geformuleerd konden worden. Deze werden getest onder 391 samenwerkingsverbanden in hoog technologische industrieën zoals de biotechnologie, IT, milieutechnologie en chemie. Het kwalitatieve en kwantitatieve onderzoek gezamenlijk, vormden de basis voor de definitieve conclusies en aanbevelingen.