Inter- and Intraorganizational Trust in International Construction Joint Ventures

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Abstract: International joint ventures in construction often face a highly complex and dynamic environment because, in most instances, they are formed to build large-scale engineering projects. One can distinguish two organizational levels that together constitute the joint venture system: (1) the interorganizational level formed by the partners and (2) the intraorganizational level of the joint venture. The partners seek to reconcile their different interests on the interorganizational level, as each of them follows the goal of profit optimization. Here, formal control mechanisms are more important than trust. Actors on the intraorganizational level face the construction task. One of the primary requirements is to reduce the project complexity. Within the joint venture, many international construction joint ventures disentangle their responsibilities by functional separation and delegation of work. In a social group, delegation of work requires trust in the capability and willingness of others to perform their duties without supervision. Especially during the initial phase, international construction joint ventures are high-pressure environments without established teams. Trust is a mechanism that allows to reach goals efficiently within this setting. As a consequence, we can find a special form of trust in international construction joint ventures: necessitated general trust that is extended to everyone even without prior knowledge. These findings are new and have high practical relevance as trust proves to be a most important success factor.

CE Database subject headings: International factors; Joint ventures; Construction management; Organizations.

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Introduction

Traffic can be analyzed as a complex system consisting of millions of different subsystems. One such subsystem is defined by the thousands of traffic participants with whom one car driver is involved over a given period of time. It has very specific rules that the participants learn when obtaining a driver's license. Signs and signals communicate these rules for specific instances, e.g., a stop sign tells us to bring the car to a complete halt. Each participant plays a defined role in this system: as a driver, a pedestrian, a cyclist, or maybe as a policeman. The efficiency of this system, the ease of traffic flow, however, is not guaranteed by rules and roles. We can pass through a crossing without reducing the speed only because we trust the other driver to halt at a stop sign.

Trust is central in many human relationships, be it on a personal (dyadic), a group, or a societal level. In the past decade a multitude of contributions have been published describing trust in different settings (Kramer and Cook 2004; Nooteboom and Six 2003; Lane and Bachmann 1998). Trust develops differently in various contexts and the roles and functions it plays differ as well.

Accordingly, findings on trust vary in accordance with the setting.

In this article, we will describe the phenomenon of trust as it appears in the joint venture (JV) system of the construction industry using existing literature and grounded theory as the research approach. It will be shown that trust does not, under all circumstances, need time to develop as literature suggests. In international construction joint ventures (ICJVs), interorganizational trust is granted without prior knowledge and without time to develop. Such trust is necessitated by the overwhelming task complexity, it is not an option.

Approaches toward Trust

There are different approaches to explain the phenomenon of trust. The most important ones are rational choice approaches, sociological and cultural approaches, and psychological approaches. These are explained in the following subsections and the discussion serves as a background to develop a theory of trust in ICJVs.

Trust as a Rational Choice

According to this line of thought, actors behave in a rational way to maximize their gains. Two of the most influential theories are transaction cost economics and game theory.

In transaction cost economics, two basic assumptions characterize actors: human beings possess a bounded rationality and they tend to behave in an opportunistic manner (self-interest seeking with guile). Moreover, the costs for any one transaction are the sum of production and transaction costs. Transaction costs

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Table 1. Payoff Table for the Prisoner's Dilemma

Choices		Burglar B			
		Confess		Remain mute	
Burglar A	Confess	A: 5	B: 5	A: 0	B: 20
	Remain mute	A: 20	B: 0	A: 1	B: 1

arise ex-ante (information gathering, negotiation, and contract) and ex-post (supervision, conflict solution, and renegotiation). Under these conditions, institutions should be organized taking bounded rationality into account and safeguard against opportunism (Williamson 1985). Trust plays no role, mistrust does. Williamson maintains that trust "… is warranted only for very special personal relations that would be seriously degraded if a calculative orientation were 'permitted.' Commercial relations do not qualify." (Williamson 1993)

The prisoner's dilemma is a well-known example illustrating the approach of game theory (Luce and Raiffa 1957). Two men are charged with armed burglary. There is only scant evidence so that the prosecution depends on the statements of the two prisoners. If both confess to the burglary, they will each serve 5 years in prison. Should both remain mute, they will be charged with one year each. If only one confesses, he will go free and the other one will have to serve a 20-year term.

When the prisoners are questioned without the possibility to communicate, then the dominant strategy for both is to confess and they will end up in jail for 5 years. Prisoner A in this case does not know how Prisoner B will behave and he will look at two possible options (Table 1): If B confesses then he (A) is better off also confessing (5 instead of 20 years). If B remains mute, confession pays off better for him (A) (free instead of 1 year in prison). Since the strategies are the same for both prisoners, each one will confess and serve a 5-year term if rationality prevails. The result is clearly not optimal.

For reaching the best possible mutual solution by remaining mute, the prisoners would have to trust each other. In terms of game theory, under conditions as above, a cooperative strategy is the best solution. Circumstances in which cooperative strategies evolve are especially dependent on the pattern of payoffs and the "shadow of the future" (Axelrod and Keohane 1986). Payoffs can be such that cooperation is encouraged and repeated games with the chance to retaliate (shadow of the future) also bring about this result. Criticism of the rational choice approach contends that people do not always engage in conscious calculations nor do they have an orderly set of preferences (March 1994).

Trust as a Sociological and Cultural Phenomenon

Sociologists have been interested in trust for a long time. A rather comprehensive early study of the topic within a framework of functional-structural system theory was published by Luhmann (1968). While Parsons (1962) stresses the structural component in his normative system theory, Luhmann is more concerned with function (Jalava 2003), thus addressing much of the harsh criticism that Parsonian theory received. He describes the construct of trust as: "trust, in the broadest sense of confidence in one's own expectations, is an elementary fact of social life. Man has admittedly a choice in many situations whether or not to put his trust forward in a certain way. Without any trust, however, he could not leave his bed in the morning" (Luhmann 1968). The same con-

clusion can be drawn from the introductory example of a traffic system.

According to Parsons, we can only put our trust in people who share the same goals and values. It is the "…'feeling' of the solidarity of collective groups" (Parsons 1978). This excludes trust between different cultural groups who do not share the same values. Luhmann's focus is quite different as he sees trust on the background of his functional-structural system theory. According to him, the central characteristic of modern societies is their overwhelming complexity. Complexity describes the multilayered structure of society, where many levels operate interdependently of each other and decisions carry important consequences. This leads to the fact that each individual has many more options of experiences and actions than he can realize. Therefore, reduction of complexity is the main task of modern societies. By constituting systems, such as an ICJV with a specific task, we reduce complexity by creating a higher degree of order. Yet the internal complexity of such a system is still not manageable. One further mechanism of complexity reduction is trust. When trusting, we reduce the future complexity because we choose to consider only a subset of all possibilities, e.g., that a colleague will solve a task satisfactorily in an ICJV. As long as we trust in this, we rule out failure and act as if only a positive outcome is possible (Luhmann 1968, 2004).

Weber sees culture as an autonomous producer of social structure and networks. Both are structured through social action and thus culture is a cognitive category. Elements of culture can be material (artifacts) or immaterial (values, norms, symbols, language, and knowledge). Culture is meaning making in everyday life. The cultural world is that part of the universe which makes sense to humans (Lewis 2002). Different societies or groups within one society can be described by their respective cultures. On this cultural level, Fukuyama distinguishes between societies with a low level of general trust and those with a high level. While diagnosing the need for future economic success, he asserts that globalization will require flexible large-scale business organizations, which can only develop in high-trust societies, such as Japan, Germany, and the United States. For him trust is bound to the cultural system of meanings and indispensable for economic success in the future (Fukuyama 1995). It should be clear that system theory offers a poor explanation when researching trust in simple settings since complexity is one of its axioms.

Trust as a Psychological State

In such studies, the researchers take it for granted that trust exists and they ask what leads to trust. Cognitive processes and affective reaction are both seen to be such general antecedents (Morrow et al. 2004). Other antecedents in dyadic trust can be the attitudes of the trustor (disposition, prior experiences, values, and motivation) and the trustee (ability, benevolence, and integrity) (Mayer et al. 1995; Petermann 1985). While the psychological approach provides a basic understanding of human behavior with regard to trust, it often neglects the context of specific situations.

Summary of Approaches to Trust

Table 2 summarizes the strengths and weakness of the five discussed approaches to trust. This section has discussed different theoretical approaches to trust. In the "rust" section, trust will be discussed in the context of ICJVs. This will allow us to choose an

Table 2. Summary of Different Approaches to Trust

Approach to trust	Strength	Weakness
Transaction costs	Assumptions in general (bounded rationality, opportunism)	Benevolent behavior, situations where opportunism is not rational
Game theory	Analytical reasoning	People do not always engage in analytical calculations
Sociological phenomenon	Reduction of complexity	Not applicable in simple settings
Cultural phenomenon	Sense making	Not applicable in simple settings
Psychological state	Dyadic relations	Not applicable in complex settings

appropriate research methodology and to use the findings presented in the literature.

International Construction Joint Ventures

Joint ventures (JVs) always encompass a minimum of two levels: partners and the joint venture itself. Partners and the joint venture are parts of the joint venture system. If the partners come from different countries, we will talk about an international joint venture (IJV). If, in addition, a client becomes part of the joint venture system through a construction contract, we look at ICJVs (see Fig. 1).

Interorganizational trust plays a role between the different partner organizations while intraorganizational trust refers to the same construct as it applies within the joint venture. Interorganizational trust could also denominate a specific relation between the ICJV (or the partners) and the client. The relationship between ICJV and clients will not be discussed in this paper. It has been amply discussed in the construction literature (Smyth 2000).

Structure of ICJVs

While literature on joint ventures and IJVs is plentiful, this is not the case for ICJVs (Contractor and Lorange 2002). It is important to note this because IJVs and ICJVs differ markedly. IJVs mostly take the form of equity joint ventures, ICJVs are contractual joint ventures. This fact does not allow us to transfer findings from IJVs to ICJVs without proof.

Equity joint ventures are regulated by a corporate and a joint venture contract. They are relatively independent of their parent companies through the stipulations of the corporate contract (e.g.,

as a private limited company). The joint venture contract describes the goal of the joint venture in general terms, the amount of equity, and the duration of the IJV. These contractual relationships are depicted in Fig. 1 for the case of four partners from three countries. An equity joint venture in general has time to develop and grow. If they are formed as production joint ventures, they produce exchange goods. These types of goods are first fabricated and then offered for sale. An equity joint venture enters into sales contracts as a last step.

Contractual joint ventures are also regulated by two contracts but these are of a different type. As for equity joint ventures there exists a joint venture contract that determines the internal relations. In addition an external contract is signed. In the construction industry this is the contract between the client and the partners to the joint venture. The construction contract describes the task, the budget, and the construction period with precision (Hinze 1993). This contract puts pressure on an ICJV so that task fulfillment becomes paramount within the joint venture.

ICJVs are typically formed to build large-scale engineering projects. Recent examples are the channel tunnel between France and the United Kingdom, the Great Belt and Øresund links in Denmark, the Taiwan high-speed railway, the expressway system in Bangkok, or the Three Gorges Dam in China. As such, ICJVs can be described by contextual turbulence, performance ambiguity (Fryxell et al. 2002), and by complexity. We can easily assert that there is a high task complexity. ICJVs are formed by a network of contractual relations between a minimum of two construction companies, design firms, subcontractors, suppliers, and the organizational network of the client. Again, we can easily establish the condition of social complexity. The same holds true by definition for cultural complexity of the ICJVs. For all these reasons, it seems imperative to interpret ICJVs in the framework of the Luhmannian system theory that is based on complexity.
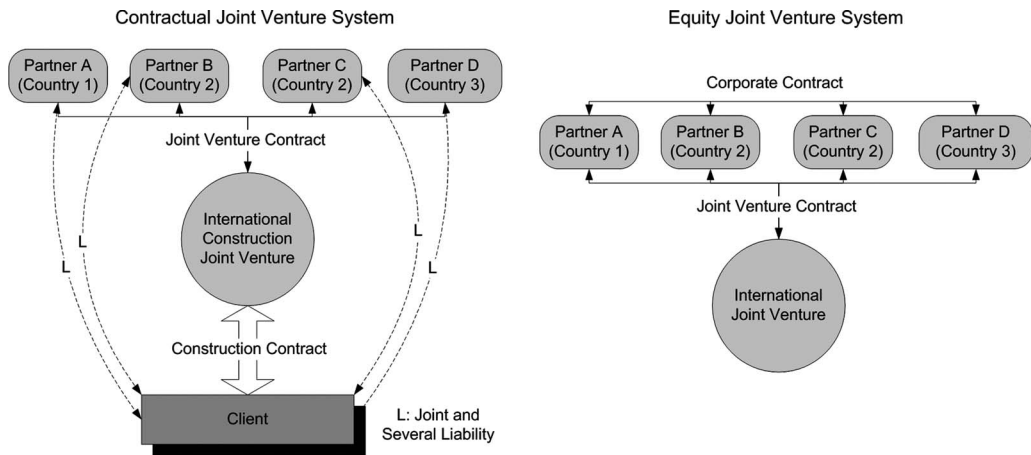
Fig. 1. Contractual and equity joint ventures

Table 3. Motives of Foreign and Local Partners in ICJVs

	Motives to form an ICJV	Local partner	Foreign partner
Two-sided goals (both partners benefit)	Economies of scale		Advantage
	Risk sharing between partners		Advantage
	Improve competitive position		Advantage
	Secure financing		Advantage
One-sided goals (only one partner benefits)	Market access for foreign partner	Disadvantage	Advantage
	Access to local resources for foreign partner	Disadvantage	Advantage
	Serving key accounts of foreign partner	Disadvantage	Advantage
	Local content to protect local partner	Advantage	Disadvantage
	Technology transfer to local partner	Advantage	Disadvantage
	Know how transfer and training to local partner	Advantage	Disadvantage
	Profits in hard currencies for local partner	Advantage	Neither advantage nor disadvantage

In summary it can be stated that ICJVs serve directly two sides, the partner companies, and the client. Task, budget, and time are precisely known. The construction period is normally short (Hassan et al. 1999). Task, social, and cultural complexities are high. On the other hand, equity joint ventures serve only the partner companies and since the goals are not exactly known, they require more time to develop.

All three groups of an ICJV system have different interests. In addition, the single partners will follow their own specific interests. Without getting into the details of specific ICJVs, it is possible to distinguish between the interests of the foreign and the local partner. They can either pursue common or separate goals. Table 3 lists the advantages or disadvantages associated with the motives to form an ICJV for these two groups. Most of the motives in the table are taken from Badger and Mulligan (1995). The results clearly show that local and foreign partners have a number of goals where they follow different paths and where there are incentives for opportunistic behavior. In addition to the goals enumerated in Table 3, there exists a fundamentally different condition for the two parties. The local partner will always need to serve clients in his country while foreign partners could choose a hit-and-run strategy. Information is also not symmetric in the two groups. Through easy access to the local network and especially to the client, local partners are in possession of more information. Information asymmetry opens the door to opportunistic behavior (Williamson 1985).

In the pursuit of their interests, partners to ICJVs are tempted to resort to opportunism. This is not the case in contractual joint ventures directly because of the high demands to solve the task as defined in the construction contract. While the partners have time to engage in strategic games, members of the ICJV do not share this privilege. This means that, on the one hand, one can take advantage of the findings on interorganizational trust and, on the other hand, one must research the situation of ICJVs on intraorganizational trust in a new way.

Interorganizational Trust in the ICJV System

ICJVs do not differ from IJVs on the partner level. Thus, no new research needs to be performed. Instead it suffices to present results from existing research on IJVs. In a quantitative study on 129 U.S.-based IJVs, Fryxell et al. (2002) have found that the perceived performance of IJVs increases proportionally with the formal control mechanisms installed for younger IJVs as it decreases proportionally for older IJVs. ICJVs have a limited life due to the construction contract and can overall be considered to be short-lived. Then, trust does not play an important role, however, formal control mechanisms contribute positively to outcome.

In a metastudy summarizing the results of 91 articles, Robson et al. (2002) have identified 74 determinants of IJV performance that they classified into seven groups. The partner domain consists of two groups: interpartner characteristics and interpartner fit. In their framework, trust can only be found in the venture domain (intraorganizational trust).

These two studies provide sufficient evidence that in short-lived ICJVs, trust plays no important role on the interorganizational level. The overall hypothesis of this research is that, on the contrary, trust plays an important role on the intraorganizational level of ICJVs to achieve the task of implementing the structure within time, in accordance with the contract quality, and with the stipulated profit.

Research Methodology

Managers plan, organize, staff, direct, and control ICJVs by building them up, running them, and dissolving them once the task is fulfilled. Then they move on to the next ICJV. It seems plausible that managers going through these repetitive cycles perceive, interpret, and evaluate their physical, social, and institutional world by forming common cognitive maps through interaction. Knowledge thus is produced by this group and becomes intersubjective. This is a constructivist view of epistemology (Nooteboom and Six 2003).

This constructivist view matches well with the understanding that ICJVs form a specific culture. Weber, based on Kant, strongly advocates that social and cultural researches cannot follow the approach of the natural sciences, where laws suffice to describe a static environment following a directly observable causality. A better approach is to discover phenomena as interpreted within the framework of the members of the focal cultural group (Weber 1949).

Given this background and considering the additional fact that no research has previously been carried out, we used ethnographic interviews (Spradley 1979) to gather data and grounded theory (Strauss and Corbin 1998) to evaluate and to extract theory from the data (Eisenhardt 1989). In an inverse order to the presentation in this paper, reading of the relevant literature followed data analysis to assure an unbiased approach.

We conducted 35 interviews in Thailand and Taiwan. An open questionnaire was used to receive comparable answers to the same questions while still keeping the opportunities for the inter-

viewers to develop their own ideas. The interviewees all had experience as managers in at least one and, in the majority of cases, in several ICJVs. They came from nine different national cultures and represented 10 different parent companies. The interviews lasted, on average, more than 1 h and one of the focuses was on the phenomenon of trust. The resulting model of trust in ICJVs is developed in the following chapters.

Components of Trust

Trust is definitely a major concern in ICJVs. As one of the interviewed project managers put it: "*I think it's very important when you have a joint venture with one or more than one partner—we have four partners. And I think this was our success, that we trusted each other after a while. We had conflicts, but there was, I want to say, almost absolute trust.*" It is surprising to listen to a project manager who has just finished a large-scale project on time, according to contract, and with a satisfying profit that he considers the success to be the level of trust achieved in this particular ICJV. While discovering the relevant phenomena in the gathered data, we will first describe the trust process, then the objects of trust, and finally the consequences of trust.

Trust Process

Many of the interviewees describe the workload at the beginning of a large-scale project as overwhelming. Before the ink has dried under the contract and while the clock is ticking away on contract time, the network between client, designer, contractors, subcontractors, suppliers, authorities, and the public has to be set up, a design encompassing more than a million items has to be proposed, detailed, and approved. Planning (quantities, qualities, resources, budgets, subcontracts, suppliers, management plan, safety plan, contract administration, master schedule, production technology, production facilities, accounting system, office organization, etc.), organizing (structure, responsibilities, and resources), and staffing (local, foreign, skilled labor, unskilled labor, and engineers) of the project overlap each other. Procurement of the lead items, installation of the production facilities, and training of the workforce follow shortly afterward. All this must be achieved while the initial engineering team in charge of these tasks is going through the usual phases of forming, storming, norming, and performing. A project manager phrased this, as follows: "*But what happens at the beginning of a project in most joint ventures is, … they have won a large project which will have a turnover and a staff that will be equivalent to most medium sized companies. Medium sized companies develop in most cases from small companies, their procedures develop as the company develops, their staff develops as the company develops and so it's a long process that is controlled. What happens in the start of these projects is that you suddenly have to throw a medium to large company together with no procedures, no processes, no understanding, no trust and you throw it into being as an operational organization on day one. And so you have a situation where nobody really knows what the other person is doing, why they are doing it, how they are doing it and even if they should be doing it. And that is the big difficulty in managing these joint ventures because you are suddenly creating a large company on day one and expecting it to operate with the efficiencies of a large company without having any of the benefits of the development time.*"

Such is a typical description of what Luhmann calls a complex system (Luhmann 2004).

It seemed impossible to set up a hierarchy as an organization structure, which concentrates the workload at the top. Instead, all ICJVs in the sample (except one) chose a functional organization with delegation of authority, thus creating subsystems with the responsibility to break down the assigned partial task complexity. This is all the more astonishing since many of the interviewees represented east Asian countries (Japan, South Korea, Thailand, and Taiwan) where, according to the findings of Hofstede (2005) and Mintzberg (1992), a high desire for uncertainty avoidance and a high power distance would typically lead to a hierarchy. The only exemption using a hierarchy was by a Korean company which was responsible for a comparatively small contract (around $300 million) while the other contracts involved volumes of approximately $1,000 million. The given explanation always was that the workload and synchronicity of tasks demanded functional separation and delegation of authority. In this case, the situational determinants quite clearly had a stronger influence on organization than culture.

The problem of functional separation of tasks is of course the integration toward a common solution. This requires teamwork for efficiency under the given circumstances. One of the few options to come to grips with the overwhelming complexity is to use trust as a mechanism for reduction.

As one manager put it: "*I think what you do, you take trust, you trust everybody at the outset and then you look for the exceptions … I think that's a very general approach. I think it's a general approach for everybody who worked overseas. People that have not worked overseas would tend to have the reverse, okay?… Those that can't trust, quickly get overloaded with work. They end up doing everything themselves.*" If trust is not reciprocated the consequences are sudden and harsh, the above cited manager would then immediately fire the employee.

Because trust is seen as so important, many managers explained that they would signal trust to their partners from the very beginning: "*We do not expect them that they have to trust us. We have to prove ourselves that we are, what do you call it, to be … trustworthy.*" This trustworthiness is then signaled repeatedly to the other parties. Again and again the same procedures will be repeated until trust is firmly established and then continuously reinforced. For example, a party in charge of the communication with the client will shortly discuss the contents of each letter with all other parties of the ICJVs before posting it until they send a return signal that this procedure no longer needs to be observed.

These findings (immediate trust and active signaling of trustworthiness) are not in accordance with the available literature on ICJVs in industries outside construction. Shapiro proposed that trust would develop slowly and build up from minor to major transactions thus requiring more and more trust (Shapiro 1987).

ICJVs resemble an adhocracy with high pressure on results in the initial phase. Power which is equivalent to hierarchy is not an adequate mechanism to reduce complexity because of the workload, rules are not an adequate mechanism because they first have to be established, so the only remaining mechanism is trust and to this managers of ICJVs revert. Benjamin Franklin once said: "We must all hang together or assuredly we will all hang separately." While choosing to hang together, there still is the possibility not to hang after all. This describes the attitude toward trust in the initial phase of an ICJV.

The described form of trust can be called a necessitated general trust. It has no time to develop and it is not rooted in face-to-face experience. It is quite obvious that under such cir-
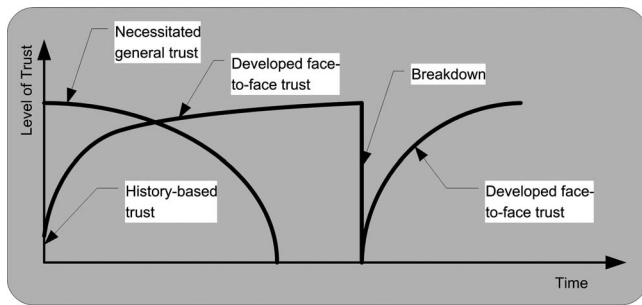
Fig. 2. Trust process

cumstances managers prefer to work with people from previous projects in which they have personal trust [history-based trust (Kramer 1999)]. During the formation of an ICJV, i.e., when preparing the bid, the partners already work together over a substantial period of time. Here it is possible to develop face-to-face trust on the interorganizational level. When people from this group are later transferred to the ICJV, they have as a starting point this amount of trust which also takes the form of history-based trust. Starting from this history-based trust, members of the ICJV will develop face-to-face trust as they learn to know each other. Face-to-face trust builds up rapidly in the fast paced ICJV environment. We would expect that necessitated general and developed face-to-face trusts are to a certain degree complementary. The latter replaces the former over time. In the words of a project manager: "*It* [face-to-face trust] *doesn't develop instantaneously. You know, it's something that, I would say, feeds on itself. You develop a little bit of trust and people start believing in each other and then it really rapidly increases. But it doesn't take much of a hiccup to put you back to square one.*"

Luhmann uses the idea of a threshold in connection with trust that was formed in the field of psychology of perception (Luhmann 1968). A zone of benevolence envelops trust and reprimanding action is only taken if the trustor perceives that the trustee has left this zone. The data suggest that for necessitated general trust this zone of tolerance is rather small and consequences are drastic (termination of cooperation). For the developed face-to-face trust, the zone is somewhat larger (it takes a "hiccup") and the consequences are not as severe (after a break down, work continues and trust building starts anew). Here, it is important to keep in mind that ICJV systems operate for rather short periods, approximately 4 and 5 years on average. This limits the growth of the zone of benevolence. Fig. 2 illustrates the time-dependent development of both necessitated general and developed face-to-face trusts.

Two annotations are still required: first, for necessitated general trust, different national backgrounds within the ICJVs are of little importance. Developed face-to-face trust, however, seems easier to be built within their own culture. "*Of course, it's always easier to build up trust in your own environment, that's very clear. So I think, within the German group it should be easier and the Japanese within the Japanese group it should be easier…*" The overall influence of national cultures is, however, not seen as determining by the same German project manager. Second, the data describe only the behavior directly within the ICJVs. Neither trust in the relationship between partners nor between the ICJV and the client follow the same path.

Objects of Trust

Whom or what do people trust in ICJVs? First of all they place their trust in people. This is not surprising, given the description in Chapter 4.1.1 of the start phase: there is not much else, no institutions, little history. Because of necessitated general trust, managers feel it is important that the people they have to trust should be competent and experienced. Experience is easy to check by looking at the records, competence is deducted from experience. An answer to the question, what is needed to get a team started on a project is: "*First trust, second is from previous experience these people know that they are competent … So if they worked together already it makes it much quicker to get a team together.*"

Most managers want to work with the "right people," especially with people they know. They stress the concept of right people in such words: "*They must be experienced, they must have the knowledge to do such work …*" or: "*What kind of people? Okay, I would like to have people who are competent in their area from the technical point of view, whether as construction managers they should have experience in the execution of the work, engineering managers should have experience in the design. Okay, that's very clear, I think.*" Experience and competence are mentioned over and over again, and to repeat this, it does not sound surprising considering that an overwhelming workload has to be taken cared of.

Trust is also placed into groups. An example is the distribution of work among people from different national cultures, in the words of a Thai manager: "*I trust the Germany for the technical, but I trust Thai people for they solve the problems with the* [public] *authority.*"

Finally, trust is limited to small groups and to specific issues: "*Yes, trust is … I mean, it doesn't go from the top to the very, very last person, but I think the senior people in a joint venture, they have to trust each other to a certain extent otherwise it makes it difficult, I think. But there probably will be a couple issues where you cannot trust, but you can deal with that. But there should be a general trust that you work together.*"

All these conclusions from the data are in accordance with the existing research (Kramer and Cook 2004). A slight difference seems to be the emphasis put on experience and competence.

Consequences of Trust

Trust reduces complexity and therefore the individual workload for two reasons. First, the energy required for controls is minimized. Second, it helps build up a team. A team is tackling separate tasks simultaneously. If there is no need—because of trust—for additional controls then there is a substantial net saving in time. "*Trust is extremely important. If you don't have trust, the joint venture has difficulties to operate because the whole time too much energy and effort is spent on watching what each partner is doing and not devoting it to the outcome of the project.*"

Consequently, people must forgo opportunistic behavior in their daily work. It seems that the losses by an inefficient team are perceived to be greater than the individual gains through opportunistic behavior. The "game" of ICJVs is played repeatedly and the shadow of the future looms as large as negative experiences in the past ("shadow of the past"). In addition, the payoff matrix favors cooperation. There were no complaints found in the data about occasional opportunistic behavior, let alone widespread opportunism. This contradicts Williamson (1985), but not game
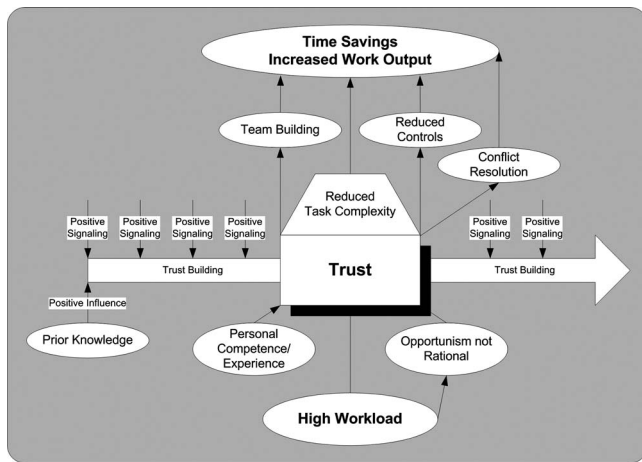
Fig. 3. Trust model in ICJVs

theory (Luce and Raiffa 1957). Yet, trust does not eliminate conflicts. Conflicts of interest arise from a different source than mistrust. So they are existing in trustful environments as well. On the influence of trust, a project manager observed: "*Yes, yes it* [work] *gets more simple. You also have conflicts, of course, because you have different opinions, but it saves time, because if you do not trust each other, then you never know what they are doing, you have to find out where they want to go and so on, trust is just important.*"

Model of Trust in ICJVSs

The discussion of the components of trust in the previous chapter allows us to build a model of our understanding of the trust process (see Fig. 3). On the vertical axis, a high workload becomes manageable through trust. Personal competence and experience are important antecedents, opportunism is not seen as a rational choice. Trust facilitates team building, thus the possibility of synchronized task solution and the resolution of upcoming conflicts. In addition, trust sharply reduces the need for controls. Taken together, trust allows more work to be done in a given period of time. On the horizontal axis the time dependence of the process is depicted. The positive influence of prior knowledge among colleagues and the need for active signaling of trustworthiness are shown.

Implications of the Model of Trust

The model of trust, as depicted in Fig. 3, is grounded in practice, it is put together from the experience of mangers in ICJVs. The research has achieved nothing but to transfer implicit knowledge of best industry practice to the realm of explicit knowledge. By basing the research on a number of high-ranking ICJV managers, the model becomes rather complete. A single manager might forget some of the components when reflecting on the construct of trust. A somewhat imprecise and incomplete notion has thus become very explicit, open to criticism or improvement, and ready for use. As such, the model of trust has become a management tool for practice.

Management tools allow us to alter our environment and to direct the efforts of a group into a desired direction. To achieve this, the top managers need to communicate the model to their

subordinates and they must live the model. There are further normative aspects to it. To name a few: try to collect a group of managers who already know each other; never forget to extend and demand trust (signaling); make sure that members of the ICJV understand that they will be first judged on whether the job gets done (earn the money together and distribute later), this makes opportunism irrational; do not use trust and high controls side by side, they contradict each other; use trust explicitly for team building and conflict resolution; punish harshly, immediately, and very openly anyone who is misusing trust, otherwise the whole mechanism with all its benefits will break down.

Research in megaprojects has also implications for smaller projects. Megaprojects magnify all problems manifold, but the same problems are virulent in even the smallest project. However, below a certain threshold, some problems will not show up in smaller projects. When building a small house with a group of three workers, the developed model of trust will have little importance. Trust will become more or less a dyadic problem, as discussed in psychology. On such a continuum from very small to megaprojects, there is a wide range of projects to which the model applies. It is the task of each project manager to determine the usefulness of the model to his or her project.

Conclusions

The most pressing problem of ICJVs is the complexity of the assigned task. To reduce this complexity and thereby create a much higher degree of order requires a lot of energy. This energy is the workload perceived by managers in ICJVs. In analogy of what happens in a driving school in the introductory example, ICJV managers learn what effective solutions are to this problem as they move from one project to the next and as they work together in a team and communicate with each other. This is a process of sense making and creates a mutual understanding of meaning (Weick 1995).

In this school, ICJV managers learn that their only chance of success is trust: a willingness to extend trust and to signal trustworthiness from the very first day. We termed this "hang-or-die" form of trust "necessitated general trust." It seems to be an idiosyncratic form that is only found in high-pressure environments without established networks. The managers need this trust to perform, but they prefer the personal or face-to-face trust that develops with time. Accordingly, they stress their inclination to work with people they know from other projects. If that is not possible, they demand that the others are experienced and competent.

Trust has several beneficial effects. It helps build teams, where trust acts as a bond of tying people together. It reduces energy otherwise required for controls. It helps in cases of conflict. Overall, it reduces task complexity. For the partner companies of the ICJV system, formal control mechanisms are more important than trust as a social control mechanism.

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