

Formal and informal contracting processes in the competitive dialogue procedure: a multiple-case study

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The competitive dialogue (CD) procedure aims to align the complex demands of principals with possible solutions that contractors have to offer. It is, however, unclear how formal and informal structures and processes in the CD are interrelated and how they determine its effectiveness. The major question in this study is how informal and formal contracting processes differ between projects procured through the CD and comparable projects that are traditionally procured. In a theoretical framework, it is shown that both the negotiations and the commitment stages consist of a formal part (formal bargaining/formal legal contract) and an informal part (informal sense-making/informal psychological contract), and that these dynamically interact as problems of understanding are identified and resolved. These elements and their interactions are studied in four comparable construction projects. The results of this multiple-case study show that commitments and negotiations can substitute for one another, whereas the formal and informal processes within these stages are complementary. Problems of understanding are key in the development of both formal and informal contracts.

Keywords: Bargaining, contracts, procurement, relationship development, sense-making.

Introduction

Increased project complexity (Baccarini, 1996; Laufer *et al.*, 1996; Alderman *et al.*, 2005; Walker, 2007), the changing role of government (Blanken, 2008) and the sector's poor professional functioning (Egan, 1998; National Audit Office, 2001) form the context in which several changes in the construction industry are embedded. In this context, in 2004, the European Commission introduced the competitive dialogue (CD). This procurement method consists of several rounds of discussion between the principal and potential suppliers, during which all aspects of a tender are open for discussion. The CD procedure aims to align the complex demands of principals with possible solutions that contractors have to offer (Hebly and Lorenzo van Rooij, 2006). It is, however, unclear how formal and informal structures and processes in the CD method are interrelated and how they determine its effectiveness.

The major question in this study is how informal and formal contracting processes differ between

CD-procured projects and comparable projects which are traditionally procured. In order to answer this question, insights into both formal and informal contracting processes, and their interactions, are combined in a theoretical framework. Based on this framework, informal and formal contracting processes between projects are studied in four comparable projects.

Theoretical framework

The basis of the theoretical framework is the process model of Ring and Van de Ven (1994). This model explains how formal and informal processes during negotiations are influencing commitments. Later, Ring and Van de Ven (2000) included important contextual elements in their model such as risk, initial trust levels, outcome expectations and environmental constraints. Vlaar *et al.* (2006) further explain how formal and informal processes are interrelated in an interorganizational context. Based on these insights,

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the resulting model (see Figure 1) shows how contracting encompasses both negotiation and commitment, and that these develop within a complex context. This study is not aimed at studying different contextual arrangements and how these affect the complex interaction between negotiation and commitment. Our focus is on understanding the complex interplay between negotiation and commitment. We agree, however, with Ring and Van de Ven (2000) and Vlaar *et al.* (2006) that context is important. Therefore, we chose a case study approach to be able to study the interaction within a specific context. Both the negotiations and the commitment stages consist of a formal part (formal bargaining/formal legal contract) and an informal part (informal sense-making/informal psychological contract), and these dynamically interact as problems of understanding are identified and resolved. These elements and their interactions will be further elaborated upon in the following sections and will guide the data collection and interpretation.

Negotiations

Formal bargaining

Within the field of microeconomics, contracting processes are viewed as bargaining processes. These processes are aimed at coming to an agreement in a situation where the parties involved have somewhat conflicting interests. The terms of the agreement are the subject of the negotiations. Relational development academics have identified four mechanisms that occur during bargaining (Zollo and Winter, 2002; Blomqvist

et al., 2005; Vlaar *et al.*, 2006): focusing attention; forcing articulation, deliberation and reflection; interacting; and reducing biases, judgmental errors, incompleteness and inconsistency. The identified outputs of the bargaining process (tacit knowledge turned into words and schemas, shared knowledge, assumptions and mental models and reduced impact of biases and judgment errors) form conditions for the second part of the negotiation stage of procurement: informal sense-making. Vlaar *et al.* (2006, p. 1622) argue, referring to Blomqvist *et al.* (2005), McGinn and Keros (2002) and Ring and Van de Ven (1994), that formalization (or formal bargaining) ‘enables, or even forces collaborating parties to engage in sense-making, helping them to create common ground and achieve mutual understanding’.

Informal sense-making

Sense-making is a social process during which members of an organization interpret their environment in and through interactions with others, thus constructing observations that allow them to comprehend the world and to act collectively (Sandelands and Stablein, 1987; Starbuck and Milliken, 1988; Isabella, 1990; Sackmann, 1991; Weick and Roberts, 1993). During the contracting process, two parties with different patterns of beliefs and assumptions have to create coherent understandings in order to come to a collective action (Weick, 1993; Maitlis, 2005). Since the two parties intend to work together, they will strive for congruent views for the purpose and expectations of the

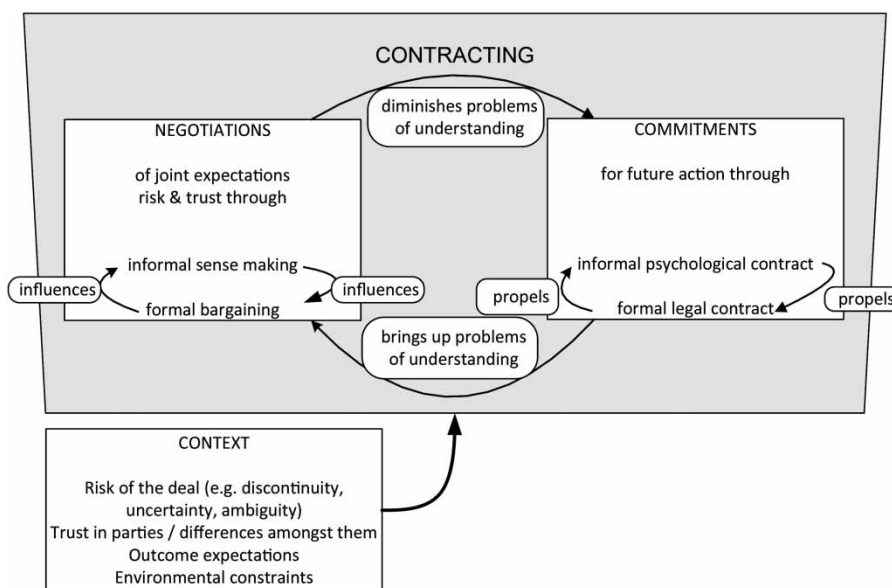


Figure 1 Theoretical framework

relationship. Sense-making processes are therefore assumed to play a central role in the procurement of a project. Weick (1995, p. 30) earlier described the sense-making process as one of enactment: parties produce part of the environment they face. The result of the sense-making process in interorganizational contracting is an understanding of the transaction, the context of the transaction and the value of it, to the other party and to oneself. Shared understandings between the two parties are reflected in mutual beliefs, norms, values and routines. These form the basis for the first part of the commitment stage of procurement: the informal psychological contract.

Commitment

Informal psychological contract

A psychological contract consists of ‘unwritten and largely non-verbalized sets of congruent expectations and assumptions held by transacting parties about each other’s prerogatives and obligations’ (Ring and Van de Ven, 1994, p. 100). Following the literature review of Van Den Brander *et al.* (2002), four aspects of psychological contracts seem to be important: subjectivity, reciprocity, implicitness and obligation. These ‘elements of quasi-moral involvement among parties’ are much more common among members of an internal organization, but can and do appear in a market context (Williamson, 1975, p. 38). In our study, we use the term informal (or psychological) contract to highlight the distinction from a formal (legal) contract. The concept of an informal contract is related to informal control. Kadefors and Laan (2010) state that

informal control is about purposefully establishing norms, values and routines, to reduce discrepancies in goal preferences and inclinations towards opportunism. Consequentially, informal control reduces risk through the establishment of shared values. A shared understanding encourages parties to establish reasonable and achievable goals, which as well reduces risk (Das and Teng, 2001).

Formal legal contract

Ring and Van de Ven (1994) describe how an informal contract becomes formally codified. Individuals act as agents for their organizations, and these organizations will require formal documentation and standardization. Thus, the informal commitments made by negotiating individuals will be put into writing for their organizations, and for other individuals also acting as agents for these organizations. Furthermore, informal commitments become institutionalized over time through the repetitive execution of acts by the individuals involved.

A formal legal contract is perceived as reflecting formal control if it contains both limitations on the opportunities for opportunism and limitations on the material incentives to utilize these opportunities.

Vlaar *et al.* (2006) argue that there are several disadvantages in formalizing informal understandings. Formalization may have negative effects on sense-making, causing new problems in understanding. The risk is that it may make events appear more comprehensible and controllable than they really are. It may lead to formalism, resulting in increased rigidity, a loss of creativity and flexibility, and diminished trust. Further, the preparation of formal contracts may involve large efforts and huge transaction costs, and they can hamper the conversation if the benefits of the contract are unclear to the parties. Conflicts (problems of understanding) can either terminate the relationship or initiate another cycle of renegotiation (bargaining) (Ring and Van de Ven, 1994).

Understanding as a key concept

The key concept in the negotiation–commitment–negotiation cycle is understanding. Having made sense of a new situation, people wish to enact their inputs to the sense-making processes back in their world, in order to reorder it (Weick, 1995). This sense-making might be in the form of having confirmed a better understanding of the other parties’ cultures, capabilities, management systems and weaknesses, or about the context in which the relationship is embedded (Zollo *et al.*, 2002, in Vlaar *et al.*, 2006), or enacting it in the form of making new formal agreements or contracts. For those points on which this collective consciousness, common reality or shared understanding is reached, parties can progress to the commitment stage of contracting (Ring and Van de Ven, 1994).

However, informal sense-making processes also propel new formal bargaining processes. These might, for example, relate to the details of contractual arrangements or to the agenda for the next meeting. These new bargaining processes further facilitate new sense-making processes which, in turn, could improve understanding. However, parties do not need to fully understand each other or completely share a point of view. Differences in prior experiences, and distinct interests and objectives, will result in differing interpretations and understandings persisting (Vlaar *et al.*, 2006).

Ring and Van de Ven (1994) show that formal and informal processes interact during each stage of the development process. It is not that formal bargaining leads to a formal contract, and informal sense-making to a psychological contract. As Ring and Van de Ven (2000, p. 172) describe it:

the two (...) are interdependent; transaction structure and process are like opposite sides of a coin. (...) [U]nderstanding transaction structures and processes requires an appreciation of both formal and informal processes. Formal legal requirements impose constraints on transaction structure and process, yet transaction negotiation and execution involves informal, interpersonal interactions. These, in turn, affect formal processes.

However, whereas Ring and Van de Ven (1994) assume that formal and informal contracts can substitute for each other (that is, the existence of an informal contract diminishes the need to establish a formal contract), the insights of Vlaar *et al.* (2006) suggest that formal and informal contracts serve rather as complements to one another. Developments in the informal contract led to developments in the formal contract, and vice versa. Our basic premise is that principles of understanding form the main force behind such developments.

Empirical research design

Perceptions are crucial in understanding why and how formal and informal contracts develop in a range of situations and circumstances. When wanting to acquire an in-depth understanding of such processes, case studies can be a useful research method (Swanson and Holton, 2005). This method should provide a rich, contextualized understanding (Miles and Huberman, 1994; Yin, 2009; Swanson and Holton, 2005). Vedung (2000, p. 50) argues that, to confirm that a cause–effect relationship exists in policy effectiveness, experimental settings are the most appropriate. Such settings make it possible to compare a situation in which a policy is implemented with similar situations in which the policy is not implemented. Combining this argument with our rationale for conducting case study research, it was decided to conduct a multiple-case study.

Background to the multiple-case study

In 2004, the backlog of maintenance work on highway and waterway infrastructure in the Netherlands was becoming a hot political issue. Given this situation, the Ministry of Infrastructure decided to develop a more corporate approach to maintenance. All the existing technical problems related to flyovers, overpasses, bridges and similar infrastructure built on or in the Dutch highway and waterway infrastructure network were merged into one programme: KOSMOS. Within this programme, construction objects which needed major maintenance were bundled into eight similar work packages and contracted out to the market using engineering and construct (E&C) contracts. By combining objects, the typical contract size was increased, and the number of projects reduced.

The suggestion to procure some of these projects using the CD procedure was made in September 2005. However, the question arose as to whether the KOSMOS projects were sufficiently complex to justify the use of this procedure. In April 2006, the minister decided to use the CD procedure for six projects (see Table 1). The complexity of the projects was seen to be in the fact that the risks and solutions were not open to objectification, so that objectively defining the technical means, capable of satisfying the agency's needs or objectives was not possible. When the decision was made to procure the KOSMOS projects by using the CD procedure, the procurement process for two of the work packages had already started in a traditional manner, using the restricted procedure. Therefore, the CD procedure was implemented for six of the eight projects.

Multiple-case study design

In studying the differences in both formal and informal contracting between projects procured by the CD procedure and projects procured by other procurement procedures, it is important that the selected cases are indeed comparable. The KOSMOS programme

Table 1 Timeline of the procurement decisions for the KOSMOS work packages

September 2005	December 2005	February 2006	April 2006	April–May 2006	May 2006	January 2007	June–July 2007
Suggestion to procure six KOSMOS projects by the CD procedure	Start of traditional procurement for two KOSMOS projects	Contract awarded for first traditionally procured project	Decision that CD procedure appropriate for procuring KOSMOS projects	Publication of decision to procure six projects by the CD procedure	Contract awarded for second traditionally procured project	Contract awarded for first CD-procured project	Contract awarded for the five remaining CD-procured projects

provided a sample of eight potential projects for a multiple-case study: eight work packages, consisting of multiple construction works requiring overdue maintenance, two of which were procured by the restricted procedure, and six by the CD procedure. The two work packages procured by the restricted procedure were automatically selected for the study. To meet the replication criterion, the selected CD-procured work packages had to be similar to those procured by the restricted procedure (Yin, 2009, p. 91). Two of the six CD-procured work packages contained only ‘wet’ construction works, such as sluices and bridges, and one work package contained only ‘dry’ construction works (such as viaducts and tunnels). These three packages were therefore excluded because the selected work packages should, to match the two traditionally procured work packages, contain a mixture of ‘wet’ and ‘dry’ construction works.

The number of construction works, the number of special works and the available information on each project were also seen as important criteria since these aspects have an influence on a project’s risks, which is one of the main subjects in the dialogue conversations of the CD procedure. Of the two traditionally procured work packages, one contained many special works (waterworks, enclosing dykes, etc.) and one no such works. Therefore, it was decided to select one CD work package with many special works, and the one with the fewest. These work packages fortunately contained comparable numbers of construction works and were similarly documented, thus creating four comparable packages for the multiple-case study. The cases

thus selected for this study were four E&C contracts, all with an interdisciplinary content (both road and water, i.e. ‘dry’ and ‘wet’ works), regionally spread, and each containing between 100 and 200 objects and 300–500 ‘problems’.

Given the explorative nature of this research, a descriptive approach based on the theoretical framework was selected. The elements chosen to focus upon in describing the four cases were therefore based on a conceptualization of the four concepts of formal bargaining, informal sense-making, formal legal contract and informal psychological contract (see Table 2). These elements are reflected in the case study protocols. Comparing the parties’ experiences, in both the tendering and the execution stages, of traditional cases with their experiences with the comparable stages in CD-procured projects will enable conclusions to be drawn on the effects of differences in the tendering stage on the later construction stage.

Data collection

Data were collected through a series of 12 in-depth face-to-face semi-structured interviews: two interviews (one with a contractor and one with a principal) for each project, plus four additional interviews with informants who could add more detail about the KOSMOS projects in general (see Table 3). Three were from the principal organization (the procurement manager, the legal counsel and the contract manager of KOSMOS as a whole) and one from the contractor side.

Table 2 The case study’s constructs and aspects, and the corresponding data sources

Constructs	Aspects	Data sources
Formal contract	Opportunity control	Contract clauses, output specifications, monitoring system
	Formal incentive control	Reward system, allocation of risks
Informal contract	Informal incentive control	Importance of the (future) relationship, importance of reputation
	Benevolence	Understanding norms/values, empathy/affect, routines
Formal bargaining	Focusing attention	Focal points in protocols and agendas
	Articulation, deliberation and reflection	Individual and mutual goals, knowledge and assumptions
	Interaction	Exchange of ideas, conversations, dialogue
	Reducing bias, judgment errors, incompleteness and inconsistency	Revising/nuancing points of views, uncovering and eliminating inconsistencies
Informal sense-making	Belief-driven	Arguments, expectations
	Action-driven	Justifications, focus on few beliefs

Document study, complemented with interviews

Interviews

Interviews, complemented with document study

Interviews

Table 3 Number of interviews, differentiated by participation level and role

		Participation level		
		Fully participated in a traditionally procured project	Fully participated in a CD-procured project	Generally involved in projects
Role	Principal	2	2	3
	Contractor	2	2	1

Each interview lasted 60–90 min and was guided by a case study protocol (see Appendix). Informants were able to talk about the manner in which formal and informal processes and contracts developed over time, both before and after contract closure. The interviews were recorded and transcribed for systematic analysis, and complemented with information from the evaluation report, the procurement documents, contractual documents and requests to change contractual terms after contract closure. All this information was loaded into the data analysis program QSR NVivo, which was used to attach labels from the theoretical framework to the empirical information. Using the program, text fragments with identical labels were easily compared, patterns were discovered and, from that, conclusions were drawn. We looked for formal and informal interaction patterns, and especially for similarities and differences between the traditionally procured and the CD-procured projects.

External validity of the multiple-case study

External validity relates to the ability to generalize a study's findings to other populations or settings (Swanson and Holton, 2005; Yin, 2009). The external validity of the present multiple-case study is ensured by making use of multiple cases (two cases procured by the CD procedure and two procured by the traditional, restricted procedure), through which literal replication is achieved. Principally, by seeking explanations which are found in both cases within each sub-group (either CD-procured or traditionally procured), the external validity of the results is enhanced: conclusions that are common to both projects within a sub-group can be generalized to the larger group of similarly procured projects. This generalization was further reinforced by discussing the results of the study in two panel discussions. One panel consisted of project managers working for the procuring agency, and the other of members of the tender teams working for the contractors. Both panels recognized the findings

of the cases included in this study as also applying in other construction projects they had worked on.

Case results

In the forthcoming sections, consideration is first given to the traditionally procured projects and then to the CD-procured KOSMOS projects. Attention is given to the development of formal and informal processes and contracts as reflected in Table 2.

Traditional cases

The successful contractors from those invited to bid in the two traditionally procured KOSMOS projects were selected by the restricted procedure. Selection in both was based on most economically advantageous tender (MEAT) criteria. Detailed assessments of the objects included in the contracts were made by an engineering firm hired by the Dutch Highways and Waterways Agency. Given that this was an engineer and construct contract, the agency did not prescribe the manner in which the maintenance should be carried out. Bidders were free to interpret the data in the assessments and to decide which maintenance approaches to employ. However, participants were provided with strict maintenance time-slots, based on the expected traffic situation and the wider effect of non-utility of the infrastructure. Furthermore, traffic hindrance was discouraged through financial incentives in the contract.

Based on their own calculations, the bidders had to produce an action plan which, along with a monitoring plan, formed part of the MEAT documents that participants had to provide. The Dutch Highways and Waterways Agency asked participants to guarantee the quality of the delivered product. The processes proposed for monitoring the quality was also assessed by the agency. The contractor who, overall, best met the agency's demands qualitatively (least traffic hindrance, quickest delivery, best planning and management) and quantitatively (lowest bid) was awarded a contract.

An intention expressed by the agency was that it would coach the successful contractor on its tasks since both the agency and the contractor were in a learning phase. Despite adopting a 'traditional' approach, functional specification and system-based monitoring were rather new to both sides, so the idea was to jointly learn from the KOSMOS processes.

Problems of understanding

When, immediately after contract closure, the construction stage started, the agency and the successful

contractor had, so far, had little contact. Except for the public inquiries during the procurement stage, no information exchange had taken place. Therefore, mutual understanding about the meaning of the contract, its scope and the plans drawn up by the contractor had to grow during the construction stage. In practice, there were several situations that resulted in problems of understanding in the early days of the construction stage.

The first problems of understanding arose from different interpretations of tasks and duties. This had mainly to do with the fact that neither the agency nor the contractors had experience in procuring contracts including a design component and involving a system-based monitoring approach. On one side, the contractors thought it was odd that the agency had not drawn definitive conclusions from the third-party condition assessments (for example, did a whole bridge have to be replaced or would it suffice to reconstruct parts of it?). From the other perspective, the agency felt that it was the contractors' responsibility to make that decision as part of pricing their bids.

One of the agency's employees who worked on one of these traditionally procured projects acknowledged that, with hindsight, the potential contractors had been given too little time to get to know the ins and outs of the condition assessments. However, neither he nor his counterpart in the other traditionally procured project was aware of this when the contracts were signed. This informal assessment of there being an imbalance in expectations did not, however, come to the surface until the construction stage had started.

When the contractors started the work, they were confronted with objects and roads which turned out to be in a poorer condition than they had expected from the condition assessments. This caused problems of understanding. In the contracts, it was agreed that, in the event of incomplete or insufficient data or when the actual state of objects and roads was worse than one might reasonably expect from the condition assessment, the extra work would be chargeable to the agency. In practice, this was not as straightforward as one might have expected.

The contractor's plans, which were assessed using the MEAT criteria in winning the contract, only included outlines of the working and monitoring plans. These would have to be specified in greater detail after contract closure, and agreed by the agency. System-based monitoring was new to both the agency and the contractors which meant that, in both projects, the contractors found it difficult to find the right level of abstraction (resulting in large amounts of paperwork in trying to improve their efforts), and the agency then took its time in checking the plans, and rejected them several times. The agency somewhat wavered between

wanting to monitor the process from a distance and checking on the details of the product itself. However, there was not the time to keep checking and re-checking modified plans since the road closures required was already scheduled, and the dates were approaching. This put pressure on completing the development of the working and monitoring plans.

Summarizing, the early months of the traditionally procured projects did not contribute to the development of positive relationships between the agency and the contracted organizations. At contract closure, the perception was that there were minor problems in understanding the working roles of each party. However, when the actual state of the objects and roads turned out not to match the description provided in the condition assessments, these small problems of understanding grew. The lengthy period and the extra versions demanded before the working and monitoring plans were accepted, and the discussions over extra work that sometimes was performed without first consulting the agency, contributed to mutual feelings of misinterpretations of the working roles.

Negotiations and commitment

From the above discussion, it is clear that it was especially the informal understandings of what was written in the formal contract that differed between the agency and the contractors. This caused the relationships in both projects to deteriorate in negative vicious cycles. Nevertheless, both the agency and the contractors involved in the projects remained committed to them. They were, in effect, still willing to cooperate for the benefit of the project. Besides developing practical solutions with regard to working on the objects and highways during agreed closure dates without having managed to agree working and monitoring plans, also the working relationships became looser.

In both projects, a project restart was organized, and this helped in the sense-making processes of both parties involved. Through these renegotiations, the parties reached a better mutual understanding of the job to be done, and the roles of both parties in this. Changing the working routines and establishing a better working atmosphere than had been the case during the earlier repairs helped in finishing the final parts of the projects.

To summarize, whereas the parties involved had no strong mutual expectations at the start of the construction stage of these traditionally procured KOSMOS projects, their attitudes towards each other became somewhat negative during the first few months of construction. However, pragmatism and official restarts created renewed mutual understandings such that the final months of the construction stage went much more smoothly with greater cooperation.

CD-procured cases

Again, five contractors were selected to participate in the tendering process. In the CD-procured projects, dialogue started early on. In the first stage of the dialogue, the pre-selected candidates were given responsibility for determining the actual problems with the infrastructure during the procurement procedure. Together, they had to determine what additional research (condition assessments) had to be undertaken on the objects covered by the contract. The agency then commissioned an engineering firm to carry out the assessment work, and the data were provided to all the candidates. Based on this information, the individual contractors could make their calculations, determine risks and costs, and ask questions during later stages of the dialogue.

After this dialogue, the contract offers could be finalized: the procedural and technical gaps were filled, and each pre-selected potential contractor had discussed individual risk distributions. This made it possible for the agency to start the CD for a situation in which the technical solutions would be determined by the contractors, while taking into account aspects related to consumer demands: traffic management, road safety, traffic-related information and communication. The candidates were thus given the opportunity to provide solutions to problems defined by the agency. During the dialogue, the scope of the CD-procured KOSMOS projects was determined for each candidate separately. The contract and the reward system were not included in the dialogue, nor were the contract philosophy or the monitoring system. The conversations focused mainly on the actual state of the objects and the roads within the projects' scopes.

At the end of the dialogue, for each project, five different scopes and monitoring systems were presented,

each with a different bid price. The contractual clauses for all the contractors were the same within each project, although small differences existed between the projects. Although the contract had not been part of the dialogue, in some cases the wording of the specifications was changed to make solutions possible for individual contractors. Candidates were given strict maintenance time-slots based on traffic requirements and the influence of non-utility of the infrastructure. Additional traffic hindrance was minimized by offering financial incentives in the contract. After contract closure, the agency, recognizing that both parties were in a learning phase, intended to coach the successful contractors, as the work progressed, in system-based quality control. CD, contracting by functional specification and system-based monitoring were all new to both the agency and the contractors, and the agency did not want this to harm the projects. The steps involved in the CD-procured KOSMOS projects are summarized in Table 4.

Problems of understanding

Already during the dialogue stage, problems of understanding were arising. The first issue was the time required to go through all the information available from the agency. Candidates felt they could not assess how complete or otherwise this information was, such that it was difficult to determine what should be included in the engineering firm's assignment. The available information was both too much in quantity and too poor in quality. Further, the engineering firm's allocated assessment time was judged as insufficient. Furthermore, candidates felt that there would be insufficient time between the condition assessments being delivered and the bids having to be submitted

Table 4 Steps involved in the CD-procured KOSMOS projects

Pre-selection	Procurement by the CD procedure			Bid and contract award
Candidates selected on the basis of certification and experience/expertise in maintenance, contract management, interdisciplinarity and traffic management	Candidates define their requirements to an external agency which will then make a condition assessment of the identified objects covering the requirements of all the candidates	Dialogue conversations about the state of the objects and the allocation of risks. (The contract philosophy and the reward system were not part of this dialogue.)	Determining, and committing to paper in action plans, the required maintenance activities based on the condition assessments and the dialogue conversations	Bids submitted containing a price, an action plan, a monitoring plan, the contract scope and a risk allocation. These were then judged on the basis of MEAT criteria

for them to evaluate the work required. However, they did not make a big deal of this with the agency, resulting in it not being discussed while clearly an important issue.

The second cause of problems linked to understanding was in assigning work to the engineering firm. The agency's intention was that candidates would jointly be responsible for drawing up the engineering firm's assignment. However, the fact that this firm was appointed and paid for by the agency gave a different signal to the candidates. As such, the contractors did not feel responsible for the contents of the condition assessments, and the given situation encouraged them to behave opportunistically. Respondents from both the agency and the contractors stated that the drawing up of the assignment for the engineering firm ended up being more of a game between the candidates than a proper attempt to get the information required. All five agency respondents and two of the three from the contractors' side agreed that the contractors were more focused on trying to confuse each other than with getting the right questions included in the condition assessments. It was as if discouraging competitors was more beneficial in eventually winning the bid than cooperating to get a clear understanding of the project risks. This caused tension on the agency's side about the candidates' interpretations of their tasks and duties. Contractors were further of the understanding that they would not have to check the situation with the objects and roads themselves since all the necessary knowledge would be included in the condition assessments. The agency, however, was somewhat surprised that they did not go and look for themselves.

These problems of understanding were, however, not addressed during the dialogue. So, although all the successful parties came out of the dialogue process thinking they had signed contracts on which there were mutual understandings, the execution of the projects showed that there was no shared understanding on these contracts. The agency and the contractors adopted different positions when the actual state of objects and roads did not match the contractors' expectations based on the condition assessments. In brief, two types of situations arose. First, there would be a problem with an element, but it would not be clear whether this problem was covered by a scenario in which it was the contractor's responsibility or whether it was the agency's. Second, sometimes something had been overlooked during the condition assessment, and it turned out that more work was required than expected. The agency felt that the candidates should have checked this and, since they had not, the agency held the contractor responsible for the extra costs. Contractors had a different opinion, and felt the agency was responsible for providing inaccurate initial information.

A third area of tension arose because the agency employees were unanimous in their opinion that the contractors did not accept sufficient responsibility, and were not truly committed to the projects; whereas the contractors complained about the agency taking the contract too literally, not thinking in terms of the projects' interests, but only from the agency's perspective. This was particularly apparent in issues concerning the system-based monitoring. Both the contractors and the agency employees felt that the system was excessive for the minor tasks that maintenance actually involves. However, with both two parties sticking to different working routines, and with claims being advanced, and with a monitoring system which was new to all the parties involved, negative vicious cycles started to develop. An outcome for the contractors was that small shortcomings could result in large payments being withheld awaiting resolution of the shortcoming.

To summarize, problems of understanding that already existed during the procurement stage of the CD-procured KOSMOS projects increased throughout the construction stage due to differences in interpretations and expectations. Moreover, during the dialogue conversations, most of these issues were not raised and therefore neither discussed nor resolved.

Negotiations and commitment

Just as in the traditionally procured KOSMOS projects, the CD-procured projects also developed through negative vicious cycles. From the above analysis, we can see that it was especially the informal understandings of what was written in the formal contract that differed between the agency and the contractors. In attempts to make sense of the situation, the two parties in each project sought to provide explanations. However, these were generally based on doubting the other party's professionalism.

The parties continued to fight over their differences regarding the actual state of works and roads, such that these could only be solved through tough renegotiations. The first of the arising situations outlined above (defining to which scenario a found problem applied) was considered on each occasion by the agency. For the second type of situation (things overlooked during the condition assessments), the agency and the contractors would attempt to renegotiate, and sometimes this would even go as far as a court case. If a verdict was given in favour of the contractors, the agency and the contractor concerned would enter a mediation process leading to a settlement. This settlement was then reflected in all the other KOSMOS projects, resulting in new agreements about responsibility for inaccuracies in the condition assessments.

Table 5 Occurrence of problems of understanding in the CD-procured KOSMOS projects

	Procurement	Construction	
Problems of understanding arose. Candidates felt that this was because the time given to interpret the available information was too short, as was the time for the engineering firm to make the condition assessments.	Different interpretations of responsibilities towards the engineering firm. Opportunistic behaviour by the candidates towards each other. The Agency and the contractors doubt each other's professionalism.	Differences between the actual state of objects and the contractor's expectations from the data in the condition assessments resulting in tough renegotiations, sometimes even requiring court resolution.	Differences in expectations about the contract and monitoring philosophy.

Along with a resolution over responsibility for condition assessments, an arrangement was also made concerning shortcomings in the work. Contract managers no longer had to decide for themselves whether or not something amounted to a shortcoming or a defect; their superiors at the agency in Utrecht would take care of this from then on. According to the informants, this helped—but it did not deliver empathy.

To summarize, due to problems of understanding remaining unspoken, the negative attitudes of both parties towards each other influenced the manner in which both made sense of new cues (see Table 5). Problems of understanding increased during the construction stage due to using internal sense-making, resulting in negative vicious circles, rather than openly expressing problems of understanding of each other. Tough negotiations, and even lawsuits in the worst cases, led to solutions, but these could not repair the relationship between agency and contractor.

Cross-case analysis

The problems and issues concerning the formal contract were very similar in both the traditionally and the CD-procured projects. These included errors in the condition assessments and in the database and inexperience with system-based monitoring in an E&C contract. Up to the point of contract closure, there were no major differences between traditionally and CD-procured projects. However, due to the greater lack of clarity in risk allocations in the CD-procured projects, compared with the traditionally procured projects, major problems of understanding arose in the CD-procured projects.

The case comparison shows just how influential the role of problems of understanding can be (see Table 6). In traditionally procured projects, the contract is extensively renegotiated shortly after contract closure. Given that an objective of the European Union with the CD procedure is for contracting authorities to discuss all aspects

of a contract with each candidate *during* the negotiations, one would expect similar post-closure renegotiations to be unnecessary in CD-procured projects. However, reality turned out to be very different.

The starting situation at contract closure was different in the CD-procured projects than in the traditionally procured projects and this had an influence when problems of understanding arose due to different interpretations of risk allocation. In the traditionally procured projects, both parties entered the construction stage rather open and uninformed: the principal and the contractor were only starting to get an idea of who the other party was, and what was important to them. Conversely, in the CD-procured projects, both parties had already formed an image of the other by the time the construction stage started. Whereas in the CD-procured projects, renegotiations seemed only to emphasize existing differences in norms, values and working routines, and also inability to empathize, all causing problems of understanding to worsen, the opposite happened in the traditionally procured projects. There, the renegotiations led to understanding, empathy/affection and mutually satisfactory working routines, even though the norms and values of the parties involved did not always correspond.

If the problems of understanding concerning risk allocation had been discussed during the dialogues, rather than avoided, it seems likely that what happened in the traditionally procured projects would also have happened in the CD-procured projects: that is, the parties would have started to make sense of the situation without having somewhat unrealistic preconceived ideas about the other party. However, since such conversations did not take place during the dialogues, the implementation stage of the CD procedure turned out to be less effective than expected. Both parties falsely believed that the dialogue conversations had led to proper understandings on both sides of the table. Consequently, their internal logic was that renegotiations would only be necessary if the other party failed to act as agreed. Given that the parties were

Table 6 Developments within the KOSMOS projects

	Traditionally procured projects	CD-procured projects
Procurement stage	An external agency would assess the state of the objects included within the scope of the contract	Problems of understanding since candidates felt that the time to interpret available information was too short, as had been the time for the engineering firm to assess the condition of the included objects Candidates define their needs in the assignment to an external agency, which will deliver a single assessment of the objects' states to all candidates. Different interpretations of responsibilities towards the engineering firm, and opportunistic behaviour by the candidates towards each other, arose
Construction	Problems of understanding due to different interpretations of tasks and duties Increased problems of understanding due to differences between the actual state of objects and the data in the condition assessments Acceptance of working and monitoring plans took considerable time, while the project work had to be carried out due to planned road closures. The work started, even though working plans were not formally accepted, to benefit the project. Working plans were later accepted Project restarts were organized, during which mutual understanding was achieved about the job and the roles of both parties	Differences in expectations about the contract and monitoring philosophy Differences between the actual state of the objects and the contractor's expectations from the data in the condition assessments Problems of understanding were explained by internal sense-making activities, such as questioning the other party's professionalism Tough renegotiations to resolve problems due to differences between the actual state of objects and the contractor's expectations from the data in the condition assessments, sometimes even going to court

unaware of the differences in understanding between them, negative cycles began to develop. Observed shortcomings by the agency were followed by proposed amendments by the contractors, followed by the rejection of the amendments and putting payments on hold by the agency. At this point, there seemed only one way out of this negativity to make the projects succeed: a reconciliation board. However, even after this settlement step, the parties in the CD-procured projects did not begin to work well together. Rather, the working routines remained distant and stiff due to the fact that, notwithstanding the open trust-building CD conversations, the relationship had been damaged by both parties' responses to disagreements over risk allocations.

Discussion and conclusions

In this section, the effectiveness of the CD procedure and the interactions between formal and informal contracts and negotiations and commitment are discussed.

Effectiveness of the CD procedure

An important factor in explaining the inconsistency between the expected benefits of CD procurement and the reality in the CD-procured projects may be that the projects were the first Dutch construction projects to use the CD procedure. Neither the Dutch Highways and Waterways Agency nor the contractors had experience of this procurement method. As such, both the Engineering and Design contract form and the monitoring system were new to the potential contractors. Before the start of this case study, the perceived wisdom was that it would not matter that the parties were unfamiliar with all of this since the CD procedure was just one element being added to the conventional situation applied in the first pair of case studies. However, given that the parties, used to traditionally procured projects, found handling the new contract form and the new monitoring system a huge amount of additional work, the added features of the CD procedure could easily prove overwhelming. The 'competitive dialogue', contracting by functional specification and system-based monitoring were all new to both the

agency and the contractors, and the agency did not want this to endanger the projects. Given the novelty, the agency intended to coach the selected contractors, as the work progressed, in system-based quality control, since both parties were in a learning phase.

One view expressed was that the complexity of the projects was such that it was impossible to objectively define the technical means capable of satisfying the agency's needs and objectives. Employees of the agency, however, dispute this claim, arguing that they knew well enough in advance how the maintenance of the objects should be carried out. There is therefore a question over whether the complexities of the projects were such that a dialogue could really make a difference in the sense of clarifying everything prior to contract closure.

Summarizing, we can conclude that there could be specific reasons for the inconsistency between the expected and actual outcomes of the CD in the projects studied. First, because the project might not have been as complex as was perceived in advance. Second, because the dialogue in this instance was not designed to be as comprehensive as perhaps was necessary. Third, because the potential contractors used it more as a means to eliminate each other than for its true function of clarifying the essence of the problems. A final possible reason, specific to this case, was the limited time that was available for both preparation and risk assessment work by both the contractors and the engineering firm employed to assess individual work objects.

The CD procedure might have been much more effective had it been applied as originally conceived. The topics addressed in the renegotiations, which were held at the beginning of the projects' construction stages, would then have been covered during the dialogue. However, given that the dialogues did not allow for discussion on all aspects of the projects, and that the candidates were more committed to eliminating each other than to cooperate, it is unlikely that the dialogue would ever have been as effective as had been hoped. Further, in both the traditionally and the CD-procured projects, we saw that misunderstandings arose because expectations and interpretations were, for various reasons, not expressed.

Interaction between formal and informal contracts

Within the case studies, the eventual formal contracts did not differ that much between the CD-procured and the traditionally procured projects. We have seen that problems of understanding were key in the development of both types of contracts. However, the informal contracts, and the processes for solving problems of understanding in the construction stage of the project,

did differ between the CD-procured and the traditionally procured projects. How parties enter into these bargaining processes is largely determined by their sense-making processes, and this explains why the renegotiations over risk allocation differed between the CD-procured projects and the traditionally procured ones.

In the CD procedure, parties get to know each other better during the procurement stage than in traditionally procured ones and, because of this, the sense-making processes at contract closure develop along somewhat different lines. The closer interactions between principals and contractors during the contracting process mean that informal and formal contracts develop in parallel. One would expect, provided the informal contract is mutually understood by both contracting parties, that there would be fewer problems of understanding during the construction phase of a project. However, in the KOSMOS projects, problems of understanding increased more in the CD-procured projects than in the traditionally procured ones. We explain this counter-intuitive outcome by stressing that the dialogue conversation failed to cover the whole contract. Although they developed simultaneously, the formal and informal contracts did not develop along parallel lines, rather, the two grew further apart. In fact, one could almost argue that we witnessed two monologues rather than the intended dialogue.

This indicates that the CD procedure's design and its side-effects influence the forming of both formal and informal contracts. The outcomes indicate that formal and informal contracts are indeed dynamically inter-related. The results of this multiple-case study show that commitments and negotiations can substitute one another, whereas the formal and informal processes within these stages are complementary. This study shows that competing views—the substitute perspective and the complementary perspective—can be reconciled by moving the focus from the relationship between contracting parties in general onto the problems these parties experience in understanding each other and onto the contract which relates them to one another. Problems of understanding have been shown to be key in the development of both formal and informal contracts. Further research needs to consider the effect of context on the contracting process.

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Appendix: Case study protocol - KOSMOS projects with CD procedure

Question 1: Background information and context

In what period of time were you involved in this project? What was your position during this project? Could you provide a short description of what your tasks were during PROCUREMENT and CONSTRUCTION? What is your experience with projects of this size and contract form? Why was the CD procedure used for the procurement of this project? What did you think of this in

advance? What were your expectations of the CD procedure?

Question 2: Contract structures during the procurement

To what extent did you experience the CD procedure as facilitating a conversation between the two parties? Which were the hot potatoes during the procurement phase and how did both organizations handle them? Do you think the fact that the project was procured by the

CD procedure influenced the contract? Which were the hot potatoes in the contract and how were these solved? How would you describe the competitiveness between the participants to the dialogue?

Ask further on topics related to:

Reward system	Importance of the future relationship
Allocation of risks	Importance of reputation
Contract clauses	Understanding
Output specifications	Norms / values
Monitoring system	Empathy / affect
	Routines

Question 3: Interaction processes during procurement

How do you look back on the dialogue (positively/negatively, and why)? How do you think the other parties look back on the dialogue, and why? How would you describe the atmosphere and contact at the dialogue table and beyond? Why? Could you give some examples of situations/actions showing this atmosphere and contact? How did the procurement content affect the relationship? Do you think that the fact that the project was procured by the CD procedure influenced the atmosphere and contact? How did the tender contribute to the building of trust between you and the other party?

Ask further on topics related to:

Focal points in protocols and agenda	Arguments
Individual and mutual goals, knowledge and assumptions	Expectations
Exchange of ideas, conversations, dialogue	Justifications
Revision/nuancing points of views, uncovering and elimination of inconsistencies	Focus on few beliefs

Question 4: Contract structures after contract closure

To what extent do you think that the allocation of risks turned out to be balanced (both in positive and negative senses)? How do you think the other party assessed the contract? Which were the hot potatoes during the execution of the project and how were these solved?

What innovative suggestions did the tender process cause participants to come up with?

Ask further on topics related to:

Reward system	Importance of the future relationship
Allocation of risks	Importance of reputation
Contract clauses	Understanding
Output specifications	Norms / values
Monitoring system	Empathy / affect
	Routines

Question 5: Interaction process after contract closure

How would you describe the team spirit within your own project organization at the moment of contract closure? Do you think that the other party (both the individuals and their organization) committed itself to the project? How would you describe the attitude of both organizations towards one another? How are contacts between both project organizations now (formal/informal, purely professional/personal)?

Asking further on topics related to:

Focal points in protocols and agenda	Arguments
Individual and mutual goals, knowledge and assumptions	Expectations
Exchange of ideas, conversations, dialogue	Justifications
Revision/nuancing points of views, uncovering and elimination of inconsistencies	Focus on few beliefs

Question 6: Remaining issues (only if relevant)

You have been involved in more than one KOSMOS project, when comparing the two projects you were involved in what are the most remarkable differences? Do you think that the fact that in one of the two projects the CD procedure was used played a role in these differences? Are there aspects I have not asked about which you would like to add?

The case study protocol for traditionally procured KOSMOS projects followed the same structure.