Co-opetition in Knowledge Intensive Networks: Two Case Studies

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ABSTRACT
In a dynamic business environment that accommodates many competing organizations that co-operate in networks, and where knowledge has become vital, it is necessary to improve our understanding of how these organizations manage such co-opetitive relationships. In this paper we develop a framework that is largely based on the work of Bengtsson and Kock (2000). The framework is used to analyze two case studies of co-operative networks in knowledge-intensive networks; one in the domain of hydraulics engineering and the other in software engineering. We contribute to co-opetition theory in two ways. A) We add empirical observations to co-opetition theory, which until now has primarily been focused on a discussion at a more conceptual level. B) We extend and refine the framework first introduced by Bengtsson and Kock by complementing it with concepts from related theoretical domains and by assessing its value through empirical study.

Keywords: co-opetition, knowledge-intensive networks, coping strategies

INTRODUCTION
This paper focuses on *co-opetition*. Co-opetition refers to a market situation in which two or more organizations compete and cooperate simultaneously. The idea is that such a specific relationship offers distinct advantages that competition or cooperation alone cannot offer. In general, co-opetition offers organizations access to the resources of another organization and at the same time triggers them to diversify and innovate. Brandenburger and Nalebuff (1996) first introduced the concept of co-opetition. They defined the concept of competition rather broad and as a result, they included relationships with suppliers and customers and called them co-opetitive. In this paper however, we will restrict co-opetition to relationships between organizations that compete in the same market and want to reach the same customers (see also Bengtsson & Kock, 2000; Dagnino & Padula, 2002).

Co-opetition appears to be a term that is highly appealing to researchers and as a result it has received increasing attention in strategic-business literature. One thing that struck us when analyzing state-of-the-art research on co-opetition was that most of the literature is of a conceptual nature. Most studies present a conceptual framework in which a typology or taxonomy is proposed (e.g. Dagnino & Padula, 2002; Lado et al., 1997). In other work propositions are defined, but they are hardly based on actual empirical evidence (Gnyawali & Madhavan, 2001). Because there is a recent rise of co-opetitive networks and an increased importance of knowledge and knowledge sharing within such networks, we are particularly interested in knowledge-intensive networks where co-opetition occurs.

In this paper we focus on empirical data from two case studies. Both case studies share that they are on a meso-level. This means that we are not focusing on an entire industry, but on the level of organizations. All of the organizations are located in Europe and have formalized the cooperative part of their co-opetitive relationship in a network. We use the case studies and existing theory to understand how co-opetition is sustained and takes place *in practice*. We specifically focus on the question how organizations are able to manage the two logics of competition and cooperation simultaneously. On what type of activities do the organizations cooperate and on what activities do they compete? How are such decisions made? How do organizations disentangle the two logics of competition and cooperation? To answer such questions we have conducted interviews with professionals from the organizations and asked them how they perceived and managed the co-opetitive relationships with the other organizations in the network.

Our paper is structured as follows: We start with an analysis of the theory on co-opetition. Based on existing literature we will create a theoretical framework to help us analyze our case studies. After presenting our research methods and the two cases, we will analyze the two case studies in more depth using our theoretical framework. We will end the paper with a discussion and some concluding remarks.

THEORY

The concept of co-opetition

Over the last few years, organizations have increasingly formed networks and alliances with other parties. Literature on strategic alliances has stressed that one of the most important reasons for companies to cooperate is to gain a better position in the market and thus to gain a strategic advantage over competitors (Hamel, Doz & Prahalad, 1989). Practice, however, demonstrates that many companies co-operate with their competitors. Harbison and Pekar (1998), for instance, report that at least 50% of all new alliances are alliances between competitors. This type of cooperation is different from the type typically described in strategic-alliance literature, since the organizations simultaneously co-operate *and* compete. Such a strategy of *co-opetition* (Brandenburger & Nalebuff, 1996) has broken with (or: has distinguished itself from) 'traditional' literature (mainly in strategic management) that separately discussed competition (Porter, 1980) or co-operation (Powell et al., 1996; Contractor & Lorange, 2002) between organizations. That literature primarily treats competition and co-operation as two ends of one dimension (*either-or*). The concept co-opetition agrees that the two are different, distinct dimensions, but they can occur simultaneously (*both-and*) (Gnyawali & Madhavan, 2001). This 'new' stream of literature talks of co-opetition, or syncretic rent-seeking behavior, when organizations both co-operate and compete simultaneously (Bengtsson & Kock, 2000; Lado et al., 1998).

In order to understand what co-opetition is we start by defining its two parts, namely co-operation and competition. *Cooperation*, especially in networks, is defined here as the organizational membership in a formalized multi-actor network that consists of autonomous organizations, and that has a particular joint goal for which certain resources need to be shared or co-developed (see also Gulati, 1995: 621; Parkhe, 1993: 795). Cooperation in networks creates a bigger pie because organizations have access to each other's (frequently differing) resources, they can share costs and risks, and they can become more dominant together (Kogut, 1988).

Competition is defined as a situation in which two or more organizations strive for the same customers in the same market and operating in the same sector. In accordance with Bengtsson and Kock (2000) and Dagnino and Padula (2002), we have a more distinct, or narrow definition of competition than Brandenburger and Nalebuff (1996) originally had when they introduced the concept of co-opetition. Whereas the latter included competition between a toy store and burger restaurant, we only concentrate on competitors within one market or sector, and in particular horizontal networks. Competition causes an organization to get a (bigger) piece of the pie: It generates economic efficiency through allocation of scarce resources and reduces transaction costs between partners, as well as enhances the drive for innovation and entrepreneurship (Porter, 1980; Barney, 1996).

Having defined both competition and cooperation we can now define co-opetition. In this paper we will use the term 'co-opetition' to identify a market situation in which *"co-operation and competition merge together to form a new kind of strategic interdependence between firms, giving rise to a co-opetitive system of value creation"* (Dagnino & Padula, 2002: 2).

Since cooperation and competition, as two different modes of interaction, both have advantages for organizations, a combined strategy of co-opetition is believed to be highly beneficial for organizations. And indeed, literature has identified the potential benefits organizations are able to gain when getting into a co-opetitive relationship with each other (Brandenburger & Nalebuff, 1996; Lado et al., 1998). Yet, next to the many potential advantages, the combination of the two modes of interaction also entails a more problematic issue that is based on their rival underlying logics. A competitive relation can be hostile because conflicting interests exist, whereas a cooperative relation can be friendlier due to the shared interests. When combining them into one co-opetitive relation tensions are likely to occur between the organizations. For instance, organizations can meet a learning dilemma, which implies that the collective knowledge development and mutual learning in the network are limited (or can even be destroyed) by (natural) opportunistic behavior of organizations (Larsson et al., 1998). Or an external replication dilemma can occur because internal replication requires more codification, whereas external imitation protection requires less (to prevent from leaking) (see for a complete overview Soekijad, 2005).

In the state-of-the-art literature, we found surprisingly few *empirical* descriptions explaining how organizations should manage a co-opetitive relationship, and how they *practically* manage to compete and cooperate with other organizations (see also Lanza, 2003; Loebbecke et al., 1999). In other words, we found little empirical evidence of how organizations are able to deal with the tensions that are bound to arise when forming a co-opetitive relationship. It is in this specific niche in the literature where this paper aims to contribute. In this paper, we want to develop a better understanding of how such a new type of strategic interdependence takes shape in practice. Our research question therefore may come with little surprise and reads as follows: *How do organizations manage the tensions arising from competing and cooperating simultaneously?*

Developing a framework for analyzing co-opetition

How do we study co-opetition in practice? What explains why certain co-opetitive relationships work and others do not? To answer these questions we need a theoretical framework to support our empirical analysis. This section, therefore, provides a short

overview of co-opetition literature, where we aim to find and develop a framework that can be used to analyze the case studies that are presented in a next section.

One of the most obvious characteristics in the theory that explicitly addresses the co-opetition concept, is that most of it is still of a conceptual nature (Lanza, 2003; Loebbecke et al., 1999). Most of these studies encompass a conceptual framework in which a typology is proposed (Dagnino & Padula, 2002; Lado et al., 1997) or sometimes propositions are developed that are hardly based on empirical evidence (Gnyawali & Madhavan, 2001). Larsson et al. (1998) have developed their framework for co-opetition based on secondary data, by means of a case survey. And those authors who have based their frameworks on empirical material often focus on US or Japanese firms (Afuah, 2000; Parkhe, 1993; Hamel, 1991; von Hippel, 1987), or have stressed co-opetition at the micro level, between departments/divisions within an organization (Tsai, 2002).

One of the few exceptions of literature in this respect is the article by Bengtsson and Kock (2000). They present an empirical framework based on an empirical study of three case studies. Two of their case studies are Swedish and one is Finish. In their paper they present a number of propositions, which they believe can explain how the companies in the three case studies managed to sustain a co-opetitive relationship with each other. The propositions in their article form the starting point for our framework. Below we will present and describe each of the propositions. In our description we will complement and contrast the propositions from Bengtsson and Kock with other relevant scientific literature. This will result in an amended version of the propositions.

Heterogeneity in resources

The first proposition by Bengtsson and Kock reads as follows: *"Heterogeneity in resources can foster co-opetitive relationships, as unique resources can be advantageous both for co-operation and competition"* (2000: 421). The fact that resources are complementary, is one of the reasons why organizations start cooperating in networks, since they need each other (Powell et al., 1996) and explains how they can compete with each other, namely through resources that are difficult to imitate (Barney, 1996). Because organizations cannot provide all resources, nor have all resources available, they need each other to complement each other. Through cooperation they can access the resources of the other(s). Moreover, competition requires un-imitable resources that distinguish one organization from another. This need can generate a pressure to develop and innovate (Porter, 1980). This resembles another proposition of Bengtsson and Kock (2000): *"The advantage of co-opetition is the combination of a pressure to develop within new areas provided by competition and access to resources provided by co-operation"* (p. 424). Since we feel that this proposition does not add any new insights in relation to co-opetition, and is primarily focused on the reasons of starting a co-opetitive relation, without necessarily explaining how such a co-opetitive relation works, it is not included in our framework.

In their work Bengtsson and Kock do not make a distinction between different types of resources. Yet, resources can vary widely. Furthermore, certain types of resources are easier to protect from a competitor and therefore lend themselves better for competition or cooperation than other resources. In this paper we use the distinction that is proposed in Gnyawali and Madhavan (2001). They distinguish between three types of network resource flows: *asset flows* (money, equipment, technology, and organizational skills), *information flows* (information and knowledge), and *status flows* (legitimacy, power, and recognition).

Heterogeneity in such resources can foster co-opetitive relationships, because *unique and complementary* resources can be advantageous both for co-operation and competition. Therefore our first proposition reads as follows:

Proposition 1a: Heterogeneity in asset flows can foster co-opetitive relationships.
Proposition 1b: Heterogeneity in information flows can foster co-opetitive relationships.
Proposition 1c: Heterogeneity in status flows can foster co-opetitive relationships

Separation of the two logics
One of the central questions in relation to co-opetition is how to manage the two competing logics of interaction. In their work, Bengtsson and Kock identify two propositions to manage these logics simultaneously. One of the propositions is: *"The co-operative and competitive parts of a co-opetitive relationship are divided due to the closeness of an activity to the customer, in that firms compete in activities close to the customer (output activities) and co-operate in activities far from the customers (input activities)"* (Bengtsson & Kock, 2000: 421). This way of splitting up through activities, is in alignment with the practice of pre-competition, in which research (or R&D) activities are executed together, before a product or concept is (further developed and) marketed separately within the individual, competing organizations. However, it will be an interesting proposition to study, when the co-opetitive network consist of knowledge-intensive organizations that are services-based. These organizations depend on their knowledge, skills, or capabilities to 'produce', as they market such knowledge in their services. This will make a distinction between customer and producer less explicit (e.g. von Hippel, 2005), and thus might make distance-measures, such as 'close to' and 'far from', harder to make. Therefore, the original proposition is a particularly interesting one to study in a knowledge-intensive, services-based setting.

The other proposition that addresses the separation of the two logics is: *"individuals cannot co-operate and compete with each other simultaneously, and therefore the two logics of interaction need to be separated. The two logics of interaction inherent in co-opetition can be divided between different units within the firm, but if that is not possible, the conflict can instead be controlled and co-ordinated by an intermediate organization"* (Bengtsson & Kock, 2000: 423). We divide this proposition into two separate propositions: One proposition focusing on different units and one focusing on the intermediate organization. The reason for splitting them into two is that they might not be as interrelated as suggested. It might be that some organizations are better suited for one of either solutions, or it might be that both solutions can co-exist within one co-opetitive network. Particularly the rules and regulations that such an intermediate organization could issue would make it possible to manage the co-opetitive relationship. Hence, we come to three interrelated, but distinct propositions:

Proposition 2: The co-operative and competitive parts or logics of a co-opetitive relationship are divided due to the closeness of an activity to the customer; the closer to the customer the more competition.
Proposition 3: The two logics of interaction inherent in a co-opetitive relationship can be divided between different units within the participating organizations.
Proposition 4: The conflict based on the two logics of interaction inherent in a co-opetitive relationship can be controlled and coordinated by an intermediate organization that can set leading rules and regulations.

The embedded nature of a co-opetitive network

Bengtsson and Kock (2000) propose, *"the decision to co-operate or compete in a specific product or market area needs to be made with regard to all the competitors' positions and the connectedness between them, as a change in one relationship within the network may effect the other competitors' relationships and positions"* (p. 422). This refers to the embedded nature of all organizational relationships within a larger context of relationships (Uzzi, 1997; Gnyawali & Madhavan, 2001). Whereas Gnyawali and Madhavan (2001) discuss how several structural properties influence competitive dynamics, we are primarily interested in the *process* of the network, instead of the *structure* of the network as such. Bengtsson and Kock (2000) are not explicitly clear about the 'causality' of their proposition, as they speak of interdependence and indicate that a relationship *"is affected and affects"* (p. 421). Hence the question is, will a change in co-opetitive behavior influence the network positions, or will a change in network positions influence co-opetitive behavior? Since this research aims to analyze the propositions in the framework *in practice*, focusing on the co-opetitive network, it is more feasible to study the effect of the context on the network. Therefore, our research focuses on the influence that the context has on the relations between organizations in the co-opetitive network.

Another issue that requires clarification is how the co-opetitive relationship is influenced when the environment changes. Bengtsson and Kock primarily focus on the role of management. However, it is questionable whether this is the case. Particularly in knowledge-intensive organizations, professionals are the most important knowledge workers. Specifically, the latter are said to have an important role to play in the knowledge exchange and 'success' of alliances and networks (von Hippel, 1987; Kreiner & Schultz, 1993). In this research, we do not specifically focus on the role of the management as such, but include the role of the professionals as well. Although Bengtsson and Kock stress the importance of a well-balanced and carefully-made decision, we do not constrain ourselves to this view. We are particularly interested in the actual behavior of the people within the organizations in a co-opetitive network, more than the 'normative' strategic behavior in terms of what they 'should' do. This casts doubt to the statement that people in those organizations indeed make such decisions based on 'rational considerations'. We do agree with Bengtsson and Kock (2000) that changes in the market place could affect the co-opetitive relationship between organizations. This effect could be gradual. For instance, one organization could gradually become a more dominant player slowly changing their relative position in the network and their levels of competition and cooperation. What is clear, however, is that changes in the context affect the co-opetitive relationship over time, hence our proposition:

Proposition 5: The embedded nature of co-opetitive networks implies that changes in the relations in which the network is embedded, are likely to affect and change over time the co-opetitive relationships in the network.

Internal acknowledgement of co-opetitive relationships

It is also proposed that: *"the conflict between co-operative and competitive logics of interaction is internalized in organizations involved in co-opetitive relationships, and, hence, the acceptance of the conflict and consensus about organizational goals are managerial issues of great importance for the establishment and maintenance of a co-opetitive relationship"* (Bengtsson & Kock, 2000: 423). Although they state that the conflict between

the two logics is internalized, it remains unclear where exactly in the organization: Is it only internalized at the top-management level, or also at the level of (operational) professionals? In order to see which groups are important, and because espoused/canonical is not the same as in-use/non-canonical, we separate between two propositions. Also, it is a question whether people really need to *accept* the conflict (and have consensus about the organizational goals) in order to cope with it, as Bengtsson and Kock explain the internalization. It might be enough to acknowledge its mere presence. Therefore we use the term 'acknowledgement', as this can be 'asked' to the respondents.

Proposition 6a: Managers of organizations within a co-opetitive network need to acknowledge co-opetition, in order to foster such relationships.

Proposition 6b: Professionals of organizations within a co-opetitive network need to acknowledge co-opetition, in order to foster such relationships.

Relational capital

When assessing all of the above propositions as mentioned in Bengtsson and Kock (2000), it becomes clear that they do not explicitly refer to issues of trust in inter-personal relations. Literature often does, however, refer to trust as an important factor for cooperation to succeed (Nooteboom, 2002). Nooteboom (2002, p. 37) writes about trust: *"…trust is a disposition towards trusting behaviour, that is behaviour with limited safeguards, accepting vulnerability, based on the expectation that this risk is limited."* Hence, the presence of trust could be an important explanation as to why organizations cooperate and willingly share important information and resources with other organizations. Therefore, we suggest that our framework should at least include this aspect. Whereas most literature on trust in networks focuses on cooperation, Kale et al. (2000) specifically addresses the co-opetitive relationship. More specifically, in their article, Kale and his colleagues, introduce the concept of relational capital, defined as mutual trust, respect, and friendship that reside at the individual level between partners in a network (p. 221). They argue that relational capital influences co-opetitive behavior, as it creates a basis for learning and knowledge transfer on the one hand, and curbs opportunistic behavior, which prevents the leakage of critical knowledge, on the other hand. Therefore, relational capital can enable competition and co-operation to co-exist. This leads us to the following proposition:

Proposition 7: Relational capital between partners in a network can foster co-opetitive relationships.

METHOD

This paper reports on two qualitative case studies that were undertaken to explore co-opetition in inter-organizational networks. The first case study is called the Delta Network. The case is made anonymous at the request of the organizations and the individuals involved. The second case is ZEA Partners. Both cases involve an institutionalized network in which a large number of organizations have to some degree formalized the collaborative aspect of their relationship. In the network they organize and perform joint activities: They collaboratively work on (EU funded) projects, have regular meeting, share and exchange knowledge, and even perform mutual competitive projects. Another commonality between the two cases is that the organizations are knowledge-intensive and provide a variety of services to their customers. The networks differ in that they are situated in two different sectors. The, primarily Dutch, organizations in the Delta Network provide civil and hydraulic engineering

services. The organizations in ZEA Partners are active in the software market and provide web and intranet services.

Our goal is to use empirical data to develop new theoretical insights and understanding of how organizations manage their co-opetitive relationships in knowledge-intensive networks. A qualitative approach is suitable when interested in understanding the meaning of events, situation, actions, routines, or a particular context within which actions are undertaken (Maxwell, 1996). This fits our research. We use case studies to build theory, because we aim to understand and interpret practices and processes of co-opetition and managing such relationships, which can best be studied in real life (Eisenhardt, 1989).

Our research is explorative and has adopted semi-structured interviews as the primary method of data collection. The interviews were structured along open-ended questions related to the framework, and were mostly taped and fully transcribed. The 30 in-depth interviews for the Delta case were performed in 2003. The research on ZEA Partners is work-in-progress that has until now used 5 in-depth interviews. The interviews in the cases were undertaken with professionals and managers from the participating organizations and were supported, in the Delta Network, with participant observation and desk research.

In our analysis of the case studies we adopted the propositions as presented above. We used the propositions as a way to decide where to look for mechanisms to understand how co-opetition between the organizations is organized and sustained. The propositions provided a heuristic to give meaning to processes, structures and mechanisms. Important to note here is that we study an inter-organizational and multi-actor network. In both case studies the co-opetitive relationship is to some degree formalized in a quite formal association. Our study of such a relationship differs from that of Bengtsson and Kock (2000) and Lado et al. (1997). They analyze the industry level as a whole and at this level they study co-opetitive relationships. The fact that in our cases the relationships between the organizations are to some degree formalized allows us to do an in-depth study as to how the professionals in these organizations cope with the co-opetitive situation and the tensions that derive from it. We will highlight the implications –if we happen to come across them- this particular characteristic has for the framework.

INTRODUCING THE TWO CASE STUDIES

Delta Network

Delta Network is a large consortium within the field of hydraulic engineering services. This field has traditionally been a Dutch area of expertise, comprising of research and consultancy in, often large scale, technical projects that involve water in the broadest sense, such as the Delta Works and Closure dike. The five core organizations that founded Delta Network are complemented with 13 other institutes and organizations, the so-called ‘sector partners’. The Delta Network, formally established on 6 May 1999, aims to develop into an internationally renowned, multi-disciplinary knowledge centre on hydraulic engineering. It particularly focuses on sustainable (infrastructure) development of densely populated river and coastal delta areas. In addition to the general field of hydraulic engineering, the specialized fields of these organizations and institutes include construction, infrastructure, environmental and ecological issues, and safety. The participating organizations all have a highly developed and respected level of expertise in these areas, and some of them have built previous experiences with each other through earlier co-operations (or competitive strives).

Although the general field is a long-developed one, the network aims to engage in innovative practices that could further develop the field as a whole. Many of the professionals within the network, often researchers or consulting engineers, have been working in their field for quite some time. They are highly skilled experts and know their, relatively small, peer group in the Netherlands well. During their careers, so far, many of them have switched between different institutes or organizations in the field, and they all are members of various kinds of 'communities' and networks that form the context in which the Delta Network is embedded. Together, the professionals have the goal to develop new knowledge on hydraulic engineering and, as a community, they try to put it on the (inter)national research and policy agenda. They do this by performing research and applied projects for clients. Their clients include both public and private partners. Because the sector of hydraulic engineering is of national importance and interest and the stakeholders often include public parties, the government at various levels (municipalities and local governments as well as national government) is an important client. However, since several organizations have been privatized, the Delta Network currently serves a mix of both public and private clients. At various levels the participating organizations both compete and collaborate.

ZEA Partners

ZEA Partners is an association that focuses on open source software and specifically Zope and Plone. The term 'open source' refers to software in which the source code –the part of software that is human-readable and understandable- is made publicly available to others. The availability of the source code allows other software developers to understand the software and make changes where needed. Usually, open source software is published on the web and as a result virtual communities arise in which developers jointly maintain and develop a certain software program. Both Zope and Plone are names to refer to the software program as well as the community of developers. Zope and Plone are both (tools for developing) content management systems, intranets and internet portals.

Although open source software and hence Zope and Plone can be downloaded from the internet, companies have found ways to make money from selling the software. They, for instance, tailor the standard product to the demands of an end user, or they sell support for products where they are responsible for keeping the software working the way it is supposed to. A majority of the companies that focus on open source to make money are relatively small, they consist of between 3 or 10 employees and most of the employees are professional software developers. Such was and is also the case for many European companies that co-develop and market Zope and Plone.

In 2003, five European small-sized companies that base their businesses on Zope and Plone software decided they wanted to work together. To formalize their collaboration they erected the Zope Europe Association, which changed its name in 2006 into ZEA Partners. At the time of this writing, ZEA Partners included 18 partners from 10 European countries and 1 partner from the US. The association itself has appointed two people: a CEO and a product leader. Some of the goals for the partners in the network are to jointly market Zope and Plone, to facilitate communication between the partners, to exchange resources, and collaborate on large projects that, due to the size of the project, none of the companies can manage individually. To accommodate the communication between the partners they use a mailing list and they organize regular meetings and workshops –most of which are not restricted to the partners alone.

Outside the ZEA network the partners collaborate with each other also. Many of the partners hire developers who are active members in the Zope and Plone community. They know each other well and there are little barriers to communicate with each other. In the communities they meet virtually and physically and they collaborate to improve the software. Also, the partners compete quite regularly. This is most visible in software tenders. One Dutch partner explained that they compete with other partners, depending on the partner, between 5 and 20 times a year. Sometimes partner A wins the tender, at other times partner B is the winner.

A summary of the main characteristics of both cases is presented in table 1.

Table 1: Overview of cases

	Delta Network	**ZEA Partners**
Practice / Sector	Hydraulic engineering, particularly in densely populated delta areas	Open source software and services of particularly Zope and Plone
Type of network construction	Association or consortium with large board. 5 founder organizations	Association with small board. 5 founder organizations
Number of organizational members	18 organizations National (the Netherlands)	19 organizations International (Europe mainly)
Primary goals of the network	Knowledge center or platform	Marketing tool and provide credibility to the individual organizations.
Founded in	1999	2003

THE ANALYSIS

Heterogeneity in resources

Proposition 1a concerning the heterogeneity in *asset flows* shows some relevance for both cases. The Delta Network showed that the participating organizations differed in size and age. Consequently, they differed in financial means and their access to (technical) equipment, such as laboratories, simulators and high-tech technology. Some projects required large vessels with specific (underwater) measuring equipment, and one organization in particular that owned such expensive material, needed to participate in those projects. This made them complementary to other partners. At the same time, the organization competed with other participants in the sense that they were all interested in the data and measurements that were collected during these projects. With those measurements and data they were all trying to improve their understanding of coastal processes as well as trying to sell those insights and calculations to their clients. These dynamics also occurred in projects that required specific laboratories in which they used simulations.

Some organizations in the Delta Network appeared very similar, or homogeneous, in terms of assets. For instance, many of the engineering bureaus had a similar stock of technologies that they needed for the execution of their work. Most of the respondents explicitly stated that they could not see any added value in cooperating with an organization that had no added value, in terms of complementary assets. Therefore, many of these bureaus were frequently not involved and did not cooperate.

In ZEA Partners most organizations are very similar. Most of them are relatively small, often consisting of no more than 10 employees. Furthermore, the actual work that is performed by the partners requires little physical assets, other than personnel, as it involves knowledge-intensive work. The respondents did state that they can use the network to request and pay personnel from the other partners when they face a deadline they cannot meet. However, the interviewees indicated that this hardly ever occurs and that the other partners appear to be reluctant –for instance due to time constraints- to have their staff do an assignment for another partner. Thus, heterogeneity in assets has much more value in the Delta Network and much less in ZEA Partners. Essentially, in ZEA Partners the companies were surprisingly similar casting some doubts on the general applicability of this proposition.

The second proposition concerning heterogeneity, namely of *information flows*, appears to have more relevance for both cases. Often, the projects within the Delta Network were split up into smaller tasks based on the skills, experience, and knowledge base of the professionals involved. These tasks were performed by small groups of people who worked in the same area, such as the modeling of coastal processes at a micro level. The project as a whole then combined the individual tasks to link them to for instance micro- and macro-level models of coastal processes. Thus, the different knowledge and data could complement each other. The heterogeneity was also present at the personal level, as professionals have specific expertise to contribute to the network. Sometimes it was essential to have a specific person aboard: *"Because he brought in a piece of experience and knowledge and expertise that was very valuable!"* Sometimes there was a need to cooperate because the fields of expertise were complementary and vital for a project. As someone said: *"So, that is where you need each other. Those are the professional disciplines of which you are ignorant"*. Often, such a clear necessity for co-operation positively influenced the success of projects in the Delta Network. This primarily happened when problems were too difficult or too complex to solve for one single organization. Many felt that they could bring the whole field (or even country) to a higher level of development.

When professionals in the organizations of the Delta Network owned or had access to the same knowledge or skills then competition would typically be much higher. Concerning data stock competition was even fiercer. Although access to each other's data stock could make a process or project more efficient; engineering bureaus were not willing to share any of that information and as a result the bureaus had to reinvent the same wheel, and measure the data themselves. One professional stated that it is absolutely impossible to put information collected by the participating individual engineering bureaus into their database: *"They are absolutely unwilling to share this kind of information with each other"*. A manager even said that the costs involved in having to recollect data are included in the tenders. A similar process evolved in case of comparable or similar (topics for) publications.

In the ZEA case the partners exchange information through a mailing list. One company even described to have shared an example of their support contract with the other partners in the network. The contract had taken them two months and high fees on lawyers to write and yet they decided to freely share the contract among the other organizations that lacked such contracts and had no idea how to write one. Yet, the specifics of a support contract are extremely relevant as they can make the difference between winning and loosing a tender. Furthermore, the companies share language- and regional-specific information about Plone and Zope that the other organizations in the network otherwise would have little or no access to.

All in all, in both case studies the partnering organizations have different information making cooperation relevant and important, more than heterogeneity in physical assets. One reason would be that in both cases the organizations are knowledge intensive and service oriented, which makes the role of information and skills vital and of more importance than technical equipment or physical assets.

Heterogeneity in *status flows* is proposition 1c. The Delta Network operated in a very small world in which all professionals knew each other well, and the organizations often had a certain experience with each other. Several people even worked or had worked for more than one of the organizations. It appeared that the differences between the participating organizations in terms of legitimacy, power or recognition were not particularly large. Most organizations had already earned their business reputation within the sector -some through different means and for different reasons. The reputation of these knowledge-intensive organizations highly depended on the professionals employed. These professionals cooperated best when they were similarly knowledgeable and had the same status: *"Cooperation is at its best when the level of the cooperating people is approximately the same"*.

Often their clients consulted several players in the field, because they were equally good (from a client perspective). It had often been the case that clients used one of the other parties as a second opinion or countercheck after services were delivered: *"This has happened several times, which made us both very unhappy"*. Therefore, legitimacy was often granted to particular individuals who were expert in a specific knowledge domain. The balance in status between the various organizations in this small world or field appeared highly delicate in that they needed to legitimize each other and show respect to each other in order to be *able* to cooperate, in particular in the long run. And together they were able to gain more power, for instance by influencing the (political) agenda.

One of the important reasons for the companies to become a partner in the ZEA network was to get a more formal status for themselves. As mentioned earlier, the individual companies are fairly small. They have between 3 and 10 employers. With the association and the other partners they can show potential customers that there is continuity; that they have good ties with many other companies that market Zope and Plone across Europe. The idea that a Dutch company cooperates with a company in Italy, gives the company as a whole more credibility in the eyes of customers. Furthermore, the partners in the network are a safety net for potential customers in case one of the companies would deliver an unsatisfying service or if a company would go bankrupt.

Yet, similar to the Delta Case there appeared to be little heterogeneity in the status of the participating organizations in ZEA Partners. As such, the proposition appears to have little relevance. On the contrary, we suggest that similarity in status could positively contribute to the delicate balance between the organizations. Similarity in status implies that the organizations in the co-opetitive relationship are each other peers creating an incentive to cooperate –organizations want to learn from their peers- and compete –they compete for projects and to increase their status- simultaneously.

Thus, to conclude this section about heterogeneity we can say that heterogeneity in resources is an important reason for competing organizations to cooperate. However, the case studies do show that for certain types of assets heterogeneity is less relevant than for others. We will elaborate this important conceptual point in some more detail in the section 'discussion.'

Separation of the two logics
One way of separating the two logics of co-opetition is through the *distance to the customer*: The closer to the customer the more competition (proposition 2). The activities in the Delta Network were sometimes separated between basic research and applied developments for specific customers. In the first activity, professionals for instance tried to simulate tidal streams in order to understand the effects on sand erosions. In the other activity, the professionals tried to build pilots or models of constructions (such as dikes) that resisted tidal streams at sea and that could be used in practice. The ultimate goal of the network was in fact to cross this boundary and intertwine the two more closely. However, this appeared to be a difficult task, since these were often based on different rationales and goals. Moreover, some of the project leaders explicitly divided the tasks between different 'types of people': *"There are people who (…) need to position themselves in a tough competitive world (…) and others who are extremely suitable for delivering research projects"*. These latter people are likely to cooperate more with professional peers from competing organizations as their aim is to develop and not to sell. Organizations were only willing to cooperate on those activities that were far away from applications that could generate an income and result in financial benefits: *"It is knowledge that is not close to an application, and that means that it is knowledge that can easily be shared"*.

Also in the ZEA network the proposition is relevant. Organizations in the network cooperate on the development of software. They share resources and exchange best practices when they are developing and improving Zope and Plone. They have joined sessions in which they get developers from most organizations to sit together and cooperate to improve the software. Usually, these activities focus on the development and improvement of the system itself. This is a basic framework that can be used to develop a system for a customer. When developing and implementing the framework for a specific customer cooperation becomes less important and competition becomes the dominant mode of interaction. They compete in the tenders and they work individually on the actual assignment done for a customer. Thus, both our cases show that in knowledge-intensive networks, separation through customer distance is a common way for managing co-opetitive relations.

A second way of separating the logics is by nesting them in *different units* within a company (proposition 3). In the Delta Network, most of the organizations consisted of several departmental units, often based on the knowledge areas they worked in, such as underground processes (including drinking water), safety issues, wetlands, or environmental issues. Because of this division, many projects or activities often involved the same departments. This would mean that some people (from the wetlands department) would not so much work with, say, the safety-issue professionals. For instance, organizations could co-operate without problems in one area or unit, while in another unit (such as integrated coastal zone management) they do not cooperate at all. Someone described: *"You see, very strangely, that within the same group of organizations, they can cooperate easily in one area while in the other they cannot!"* Areas they were not cooperating in, they were *"rivals at the consultancy market"*, for instance.

The proposition has clear relevance in the Delta Network. In ZEA Partners, however, the proposition had no relevance. The partners are small; they generally consist of software developers and one or two managers. It is really impossible to speak about a division in units since there are no formal units. If a division needs to be made it must be between professionals and management. However, in both 'divisions' competition and cooperation are nested. The management of the organizations uses the mailing lists of the network to share

information and simultaneously they compete when they write their proposals for a tender. The professionals compete when working on an actual assignment and collaborate when working on the general Zope and Plone software.

A third separation is proposed in proposition 4, namely the creation of an *intermediate organization* that provides rules and regulations. In a way, the Delta Network as a whole can be considered as such an intermediate organization. In the network the organizations try to organize and sustain their co-opetitive relationship. The organizations can formally make agreements or divide tasks or projects. An important reason for drawing up agreements, e.g. explicit arrangements, is to prevent later conflicts: *"Because we could make good agreements beforehand, it has never led to any problems"*. It should be said, however, that this type of intermediate organization is not fully independent from the participants, as it involves and includes these participants as well. But, since it is a formalized construction that is also controlled and checked by a specific board, it serves as an intermediate organization between the individual organizations. The (national) government could also serve as such an intermediate organization when it issued regulations for certain knowledge institutes in the Delta Network: *"There are several types of subjects that we are not allowed to tender for"*.

Similarly, ZEA Partners is the intermediate organization and it has an important role in managing the co-opetitive relationship between the organizations. The association performs a number of activities that none of the partners alone can perform. Furthermore, the association has a number of policies along which the partners have to act. In cases of conflict, for instance, the president of the association has the right to propose a solution. If the partners do not agree to the solution, then the association can decide to remove one or more of the partners from the network. Furthermore, ZEA Partners can appoint partners to a certain assignment. In other words, to some extent the association will distribute the work among the partners in the network. In that sense they determine when and where the partners cooperate. In practice, however, the actual influence and importance of ZEA Partners is smaller then its theoretical influence is. For its survival, ZEA Partners depends on the individual organizations that pay yearly fees and do the actual work when the association gains a serious and large project. Therefore, in the long run, the association is dependent on the partner organizations, which significantly lowers its ability to enforce a decision on the partners.

Thus, in both cases the two logics are separated. In the Delta Network competition occurs close to the customer, is nested in different units of the organization and an intermediate organization is created to prevent and possibly settle conflicts. Due to the size of the organizations in ZEA Partners the logics are not nested in separate units of the participating organizations. Yet, they have created an intermediate organization possessing power to settle disputes and competition is mostly limited to activities that are close by the customer.

The embedded nature of a co-opetitive network

The proposition number 5 states that *changes in the relational context will affect* the co-opetitive relationship between the companies in the network. Delta Network had a strong position in the international context, in that the Netherlands have a good reputation in the field of hydraulic engineering. This made the people involved highly aware of the importance of a good organization of the sector at a national scale. Sometimes they even referred to the BV Netherlands as their organizational unit. They often realized that within the network, some parties were necessary to keep involved; as it gives customers 'a choice' between alternatives and considering the small world, organizations would remain to have a good reputation by not

putting others out of business. This sometimes resulted in strategic decisions where organizations chose to have somewhat complementary core competences: *"In some areas, such as morphological studies, we have agreed to cooperate, for if we don't, we will compete each other to death"*. Sometimes smaller organizations had to adapt and react to what other, often larger organizations did: *"We're a minor player. (…) If they think they should change their mission, then we can think all we want of it, but when they think it is necessary, they just do it"*. This way, minor players need to react to each other, in order to stay alive in the field. This was also clearly shown in the causes or reasons leading to the formation of the Delta Network as a whole; as there was an increased pressure to cooperate more intensely.

It is difficult to assess whether changes in the relational context have affected the co-opetitive relationship. Yet, there are a number of reasons to assume that the market place, as one particular aspect of the relational context in which the network is embedded, has an important influence on co-opetition in ZEA Partners. The market for open source software is a relatively young market and is dominated by many small companies. At the same time the market is growing: There are many potential new customers and their number is continually growing. These two characteristics are important, since they partly explain why competitors chose to collaborate also. The fact that the market is relatively young makes that the companies have created the association. As mentioned previously, the association gives the partners more credibility and suggests the presence of continuity. Users can decide to switch to another organization in the network if they are dissatisfied with their supplier. The fact that the market is growing partly explains why one of the interviewees considers the organizations in the network to be "*friendly competitors*". The organizations do not begrudge each other when another wins a tender, since a next time they will win it. Furthermore, they have enough assignments as it is in such a growing market. All the organizations we spoke to, for instance, were looking to expand and hire new personnel as they had too many assignments for their current size of the staff.

Hence, both cases show that the context has an influence on the co-opetitive relationship between the organizations. It is, however, difficult to pinpoint what aspects of the context affected the co-opetitive relationships and –based on our two case studies that were limited in time- whether changes in the context cause the balance in the co-opetitive relationship to change.

Internal acknowledgement of co-opetitive relationships

Proposition 6 consists of two parts: The competing logics of competition and cooperation are *acknowledged by a) the management and b) the professionals*. What in theory would appear to be a fairly straightforward proposition is more difficult to 'measure' in practice. One could argue, for instance, that the mere acknowledgement of the two logics by the managers is sufficient. Yet, this is probably not what Bengtsson and Kock intended with the proposition as they, too, use the word 'accept'. We therefore searched for clues that show that managers and professionals have moved beyond the mere acknowledgement of the conflict, but also accepted different means and agreed on the same goals.

Within the Delta Network some managers were aware of the co-opetitive situation among the participating organizations. However, they often stated that the organizations were highly complementary (in asset and information flows). This made some managers decide to say that they were not competing but merely complementing and cooperating. At the same time, they saw that at times, the organizations aimed for the same goals, such as tendering or funding for

projects or services. Thus, it was clear that they did find themselves in a co-opetitive network of relationships. Some directors of engineering bureaus reported on the 'false competition' of certain knowledge institutes in the network because those institutes received (more) funding from the government through which they could deliver cheaper services to customers that the engineering bureaus could not do. Hence, managers did acknowledge a co-opetitive situation. Sometimes they stressed the importance of a higher goal than that of the separate organizations, such as the client or the country as a whole (BV Netherlands). At that point, the interest that is emphasized is of a higher level and thus is a mutual interest: *"The interest of the client always comes first"*, or *"The work is fairly often of strategic importance to the country. That often implies that all the experts in the Netherlands need to 'agree' to some extent with what is said"*. This was one way of managing the co-opetitive relations, by stressing a higher, mutual interest.

Also, the professionals themselves recognized the sometimes precarious situation, witnessed by their remarks on schizophrenic situations, for instance. Although they recognized it, not all professionals believed they were able to compete and cooperate simultaneously: *"There is no way you can slap each other on the ears with one hand, while with the other you shake hands and open-heartedly share and develop knowledge together. We are not that dualistic"*. This could be one of the reasons why professionals were infrequently interacting with people from another organization in both logics. They were able, however, to set higher level goals for themselves, such as developing a knowledge domain, through which they could cross competitive tensions that derived from organizational interests.

The organizations in the ZEA Network recognized the conflict and understood how it could potentially lead to a schizophrenic work situation. Also, some of the respondents believed that certain organizations were less fair in the way they conducted their business. However, due to some of the previous issues –the market is growing and cooperation hardly occurs near the customers- they as of now had little problems with it and it was no reason to stop cooperating. They claimed that it was of little relevance in their daily work.

What could have been suspected was indeed the case: The managers and professionals we interviewed did acknowledge the conflict between cooperation and competition. At the same time, however, the extent to which the conflict caused actual problems in their daily work would appear to differ from person to person and from organization to organization. Managers can appeal commonalities over boundaries by emphasizing common interests at the national or customer level. Professionals can cross organizational boundaries by stressing the development of their mutual practice or knowledge domain as the central 'goal'.

Relational capital

Proposition 7 states that relational capital between persons and organizations in contributing positively to the co-opetitive relationship. Trust, respect and friendship are important to accept that another person or another organization can at certain moments in time be a competitor and at another be a partner with whom to cooperate.

Within the Delta Network interviewees frequently mentioned trust as (one of) the most important reasons for managing the co-opetitive relationships. They needed to be able to rely on each other when performing a certain task. Some explained how they shared a same kind of humor with another professional that created a good working atmosphere. Others explained to have developed such close relationships with professionals from another organization that

they actually went on skiing trips together. Interviewees referred to projects that made *"a jump forwards"* after trust had been established.

A very important factor for building trust appeared to be the similarity of professionals: They needed to consider and respect each other as peers in the same field in order to work in a 'satisfying' manner: *"If someone comes to you (…) asking 'could you help me with this', he needs to be knowledgeable"*. So their status or reputation in terms of their expertise was perceived as important. Only then the professionals dared to 'shoot at each other's ideas' in terms of giving and taking critique. Therefore, this point relates to some extent to the proposition 1c on heterogeneous status flows: They need *not* to be heterogeneous in order to keep a similar knowledge level that makes the professionals peers. These peers can also understand each other easily, since they often have the same background (education) and speak the same 'language': *"That makes it easier to start a conversation with them"* and *"they're all hydraulic engineers, with the same background (…) there are no language barriers"*. Simultaneously, only peers were able to drive each other to better performance: *"You want to show that you are at least as good"*.

Interviewees in the ZEA case did report that certain organizations in the network were easier to collaborate with than others. One interviewee explained: *"At a personal level we have I think more problems with organization X than organization Y. I think it has to do with trust: I trust organization Y more than X."* In the relationship in which such relational capital was lacking, the co-opetitive relationship was more difficult to maintain, as the tendency was to increase competition and minimize the cooperative aspect of the relationship. This was, by the way, not a very conscious decision, as the interviewee acknowledged that it simply was something that happened.

In sum, relational capital, in terms of respect, trust and friendship at the inter-personal level, seems to be a very important factor that fosters the co-opetitive relationships in knowledge-intensive networks. It would appear that the organizations need such inter-personal 'glue'.

The case studies compared

In table 2 the two case studies are compared with each other. The table shows that the case studies display similar observations for most of the propositions.

Table 2: The case studies compared

	Delta	**ZEA Partners**
Heterogeneity in asset flows	*Technical equipment was not equally shared among the partners so they could complement each other.*	*Assets could theoretically be shared among the organizations, but it hardly occurs, since there were few assets of importance.*
Heterogeneity in information flows	*Only when the organizations had complementary knowledge and information to offer, they were interested in collaboration.*	*Organizations have differing competencies, which they do share amongst each other.*
Heterogeneity in status flows	*Status flows were primarily homogeneous, since professionals preferred to co-operate with peers.*	*It is not so much that the status between the organizations is different; it is more the status caused by the association itself that makes co-opetition work.*

Separating the 2 logics: The closer to the customer the more competition	*Research was done in co-operation while there was competition on the end-products that delivered income.*	*Organizations cooperate in the development of software and compete in commercial deals*
Separating the two logics: Nesting in different departmental units	*Some units co-operated, while others competed.*	*The organizations are small and one cannot really speak of different departments.*
Separating the two logics: Erecting an intermediate organization	*The government as well as Delta Network itself set rules and regulations for co-opetitive behavior.*	*ZEA Partners consists of two full-time employers who can mediate and negotiate in the relationship.*
The effect from the context on co-opetition	*The context has influenced co-opetitive relationships several times, in particular for 'minor players'.*	*The market is growing; there is enough profit for everyone, making competition 'friendlier'.*
Acknowledgement of conflict between logics: At the level of managers	*Managers can stress the importance of higher goals than the organizational, such as national or customer goals.*	*No indication that it is a serious issue.*
Acknowledgement of conflict between logics: At the level of professionals	*Peers can stress the importance of a common knowledge domain (over organizational boundaries) that needs to be developed.*	*No indication that it is a serious issue.*
Relational capital leads to improved co-opetitive relationship	*Trust and reputation in particular were seen as important factors that influenced both co-operative and competitive behavior.*	*Trust has a positive influence on the ability of organizations to foster cooperation in co-opetition.*

DISCUSSION

In this part of the paper we would like to highlight and discuss a number of observations that stand out and that appear to have theoretical relevance. A first observation is that it proved valuable to separate between three different types of resources. Concerning the first propositions addressing resources we found that both *asset* and in particular *information* flows are heterogeneous. It depends on the type of activities whether assets, such as technology or equipment, were important. However, in the *knowledge-intensive* organizations that our research focused on, it appeared that information flows were most important. This does not come as a surprise, because information, including skills and knowledge are vital for such organizations (Grant, 1996).

In terms of *status* flows, however, the organizations in both case studies are surprisingly homogeneous. In both cases the organizations are each others peers, both from a customer perspective and an internal perspective. The organizations can learn from each other, and both explicitly and implicitly want to demonstrate their skills and knowledge. This gives rise to a relationship in which the companies want to compete for status and at the same time, to gain that status, want to cooperate to demonstrate their skills and to learn from each other. The homogeneity in status is an important conceptual point and a theoretical contribution to the proposition in Bengtsson and Kock. Explanations for this finding can be found in the concept

of ‘shadow of the future’ (Axelrod, 1984). This idea, which stems from game theory, stresses the importance of the possibility for future cooperation, as it will diminish non-defective behavior in the current situation. Thus, the partners are likely to cooperate and to demonstrate little opportunistic behavior when they believe there is a chance they will need to, for whatever reason, cooperate with the other organization in the future. In particular in a small world where all parties know each other, which is true in both cases, this can be a reasonable explanation for cooperating with one’s competitor. In a similar logic, when one of the organizations becomes highly dominant in status as compared to the other organizations in the co-opetitive relationship; there could be less prospects of future cooperation and hence less incentive to continue the cooperative part of the relationship.

Another explanation for the homogeneous status flows can be found in the idea that professionals rather seek help from their peers. Borgatti and Cross (2003) argue that people who look for help at least need to be aware of the area of expertise of the person they seek help from. And, they need to believe that the expertise held by the other person is valuable for them. Furthermore, the one who provides help will prefer to ‘give’ that help to a person who he considers to be a peer as: 1) It is likely to increase his status (Bergquist and Ljungberg, 2001); and 2) There is a larger chance of reciprocity; of the favor being returned. Therefore, it seems logical to ask a peer for help. And peers are likely to have only little difference in terms of status or reputation. This is true for any organization but even more so for knowledge-intensive organizations, since they heavily rely on their professionals.

As to the three propositions on the separation of logics: It appeared that the separation between *units* and between activities’ *closeness to the customer* both had its relevance in the cases. Although Bengtsson and Kock separated these two items, it appeared that units and closeness to customers were sometimes interrelated. Separation caused by an *intermediate organization that sets rules and regulations* could be found in at least two ways: Within the network and outside the network. Within the network the organizations (in both cases) created a formal institution that served as an intermediate organization and that was in charge of ‘setting the rules of the game’. This resembles the network rules for knowledge protection, free riding behavior and value as it was described in Dyer and Nobeoka (2000). Outside the network the government, for instance, set specific rules and regulations that influenced the co-opetitive relationships among the network participants. Such an external way could also emphasize the need for reaching a higher level goal, such as the BV Netherlands.

Based on our case studies we believe that the *embedded nature* of the co-opetitive network had an influence on the co-opetitive relationship. We found that suppliers that provided similar services and that were not participating in the network and the more general status of the market had an influence on the relationship. Such influence is not surprising, considering existing theory of Uzzi (1997) or Gnyawali and Madhavan (2001). However, it was very difficult to locate and grasp the exact nature of the influence in our empirical data. It might be fruitful to do future research on this particular proposition as Bengtsson and Kock, too, seemed to have some difficulty in describing the exact nature of the relationship between context and co-opetition. They, too, in their proposition remained somewhat vague as to how the embedded nature affected the co-opetitive relationship among organizations.

Our research further showed that both the management as well as the professionals often acknowledged the co-opetitive relationships between the organizations in the network. However, as they had found various ways to cope with it, it was difficult for them and for us to understand the actual impact of the conflict between cooperation and competition. Most

managers and professionals reported to have found ways to stress higher level goals in order to 'overcome' co-opetitive conflicts. Managers sometimes stressed the importance of the customer interests or the need to develop the country as a whole. This slightly resembled the creation of a network identity in Toyota, but that was done through various means, such as network level knowledge-sharing routines (Dyer & Nobeoka, 2000). The professionals could sometimes reach higher-level goals when they stressed the importance of developing their practice or knowledge domain. This domain could easily cross organizational boundaries, which can be related to the network-of-practice idea, as discussed in Brown and Duguid (2000). Hence, the professionals can be characterized as true cosmopolitans (Gouldner, 1957).

Relational capital was an aspect that Bengtsson and Kock fully neglected in their original framework. However, it has shown to be of great importance in our cases. Therefore, we suggest that it is an important contribution to the original framework. One reason why relational capital could be more important in our cases is that the role of the individual professionals is very important in knowledge-intensive networks. Therefore, the inter-personal dimension should not be forgotten in co-opetition theory.

SOME CONCLUDING REMARKS

In this paper we have provided a profound analysis of two case studies of co-opetition. To support our analysis we have build upon the work of Bengtsson and Kock (2000). We believe that their work is important, as they have succeeded in creating a conceptually-useful and highly interesting framework that is largely based on empirical findings. This paper shows that the framework can, to a large extent, helps to understand how and why organizations are able to organize and sustain co-opetition.

One of the things we found missing in the work of Bengtsson and Kock is their apparent neglect for the individual level: People build relational capital which can serve as important 'glue' in their relationship. As such it helps the organizations to sustain their co-opetitive relationship. An indeed, on various occasions the interviewees reported to us the importance of trust and friendship. Furthermore, our empirical and theoretical analysis provided a nuance to the framework. Bengtsson and Kock generalized when they claimed that heterogeneity in resources can foster co-opetition. What we found is that heterogeneity in information and status can indeed foster co-opetition. We did, however, not find that heterogeneity in *status* adds positively to a co-opetitive relationship. On the contrary, based on our case studies we believe that *homogeneity in status* contributes positively to the probability that organizations are able to sustain their co-opetitive relationship. Of course, we do have to make some reservations as to the validity of our outcomes. We analyzed only two case studies and we analyzed a very specific type of co-opetitive relationship, namely one in which cooperation was institutionalized in an intermediate organization.

What surprised us is that the conflict between cooperation and competition were, in both cases, hardly believed to be an issue. Managers and professionals reported to have fairly little problems in dissecting and dealing with competition and cooperation simultaneously. One reason could be that they had organized their relationships in effective ways: They used intermediate organizations, competed primarily close to the customer and had access to different and complementary information and assets. Thinking about it, one could even imagine using the original proposition by Bengtsson and Kock, which focuses on the acknowledgement and acceptance of the conflict, as a means to measure the success the organizations have in organizing and sustaining their co-opetitive relationship. Or maybe, the

proposition could be used to measure the probability that the relationship will sustain into the future.

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