

**Understanding the dynamics of interfirm relationships:
A longitudinal perspective on network position**

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*Keywords: relationship ending, relationship aftermath, relationship reactivation,
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Abstract

Managing relationship dynamics, namely, to establish, maintain, enhance, dissolve, and even reactivate relationships, has been viewed as a vital means to gaining sustainable the momentum in ever-changing business environments. Despite increasing attention, the research into relationship ending or reactivation remains under-explored, particularly when viewed through a network-level. This paper uses network position to analyse the process of relationship ending and reactivation; particular attention is paid to where the disengaged party is located in the aftermath stage. This paper explores why an ended relationship, in a network setting, can be reactivated and where the disengaged party is located in the aftermath stage using the perspective of network position. This paper finds that a richer understanding of managing relationships, e.g. relationship portfolio, can be gained when the network perspective is used to examine relationship ending and the later reactivation of this ended relationship.

Keywords

Relationship ending, relationship reactivation, network position, network dynamics

Introduction

In contemporary business-to-business markets both academics and managers have shifted their attention away from taking a transaction-oriented approach to a business relational-oriented approach (Sheth and Sharma, 1997). Increasing complexity multiplied by the factors, such as globalization of competition and rapid change in technology, has encouraged firms to cooperate with others who are embedded in an intricate web of relationships (Möller and Halinen, 1999). In other words, no firm can escape from interacting with other business organizations, they are not islands (Håkansson and Snehota, 1989).

Based on the Interaction and Network Approach developed by the Industrial Marketing and Purchasing (IMP) Group (Axelsson and Easton, 1992; Håkansson, 1982), a firm's market is better treated as a network in which its configuration and dynamics are determined by the interaction between the firm's inter-organizational relationships in terms of actor bonds, resource ties and activity links. A firm may not be able to produce or duplicate the same network formation as others', e.g. its competitor, due to the differences in goals, organizational cultures, resources (both tangible and intangible) and respective interaction histories. Nevertheless, making a good use of business relationships is found to be pivotal to a firm's success, for

example, the source of competitiveness (Baraldi *et al.*, 2007) or innovation (Powell *et al.*, 1996; Lundgren, 1995).

The importance of managing business relationships has been emphasized in the extant literature (e.g. Gadde and Snehota, 2000); however, coping with the dynamics of relationships in a network context remains challenging (Möller and Halinen, 1999). Dynamics originate from a firm's ongoing interactions with its relationships where episodes incur change and other related events (Ford and Håkansson, 2006). Handling dynamics here involves building, maintaining, enhancing and, when necessary, dissolving or even reactivating ended relationships to adapt the firm to the changing conditions. Thus, a firm's ability to adjust its portfolio of relationships is regarded as a vital means to gain long-term sustainability (Zolkiewski and Turnbull, 2002).

Although an increasing amount of attention has been devoted to the research of relationship dissatisfaction and dissolution¹ (e.g., Alajoutsijärvi *et al.*, 2000; Hibbard *et al.*, 2001; Ping, 1999; Tähtinen and Vaaland, 2006; Tuusjärvi and Blois, 2004; Pressey and Mathews, 2003), our understanding of this area is still limited. Tähtinen and Halinen (2002) indicate that a diversity of theoretical approaches (e.g. the business marketing approach and marketing channels approach) have been applied in the current research about relationship ending in which the attention is mainly focused on the factors influencing relationship ending and the ending process, which stresses the importance of the communication strategies employed by the involved parties. But most of theoretical and empirical findings are based on a dyadic viewpoint, rather than through a lens of network-level analysis.

Continuous business interaction may engender "relationship burden" for one or both of the involved parties, jeopardizing the relationship(s) (Håkansson and Snehota, 1998). On the other hand, business interaction could gather and conserve a certain degree of "relationship energy", making the reactivation of a dissolved relationship possible in the future (Havila and Wilkinson, 2002). The importance of interaction history in the development of relationships has been highlighted in the extent studies (e.g. Ford and Håkansson, 2006). Further, Havila and Wilkinson's (2002) work reveals that more empirical investigation beyond the dyadic level is required to bridge the gap between the relationship ending and the reactivation of the same relationship where a phase of relationship aftermath can be identified.

¹ Regarding the definition of relationship, a consensus has not been reached (see Zolkiewski, 2004); and consequently the view of what is an ended relationship may differ among researchers. To facilitate this research, "ceasing to trade" is an important criterion to define an ended relationship.

Mattsson (1997) and Anderson and his colleagues (1994) argue that a firm's relationships, which are built in an environment of markets-as-networks, are best understood when they are related to a network context, due to the characteristics of embeddedness and connectedness. Taking into account the embedded nature enables the firm to grasp its interdependence structure while the connected nature allows the firm to consider the positive and negative effects of a relational tie on involved parties and others to which it is connected, especially when the nature or strength of a relationship is altered. In this way, a more productive meaning can be captured from a newly established, dissolved or reactivated relationship, allowing the firm to design a portfolio of relationships that better fit the surroundings.

This research aims to acquire new insights into relationship ending, relationship aftermath and the reactivation of the previously dissolved relationship in a network setting. A particular interest is to uncover where the disengaged party is located in the relationship aftermath in which its changed position may affect the focal actor's co-opetitive stance (e.g. the coexistence of cooperation and competition) (Bengtsson and Kock, 2000); which in turn may affect the possibility of relationship reactivation. Obtaining these new insights will lead to a better understanding of relationship management which aims at achieving competitive advantages (Baraldi *et al.*, 2007; Ritter and Gemünden, 2003).

The rest of the paper is structured as follows. Firstly, a preliminary framework following the theoretical elaboration on network position is provided. Secondly, the selection of research methodology is rationalized. Then, a longitudinal case study is presented. Lastly, theoretical and managerial remarks conclude this paper.

Network position: An overview

This research centres on network position as the main theoretical foundation. Network position emphasizes the characteristics of connectedness and embeddedness of relationships in a network (Anderson *et al.*, 1994; Johanson and Mattsson, 1992). This implies that the change of a firm's network position will incur dynamics of relationships to which the firm connects, and in turn, change the firm's cooperative and competitive stance (Bengtsson and Kock, 2000; Ritter and Gemünden, 2003). Network position is thus a powerful conceptual tool that suits this research.

Network position as identity in a network of organizations

Each company occupies a unique position that is given by the quasi-organizational structure consisting of exchange relationships to which it connects (Johanson and Mattsson, 1992). This position involves accessing, using and combining resources via transferring and transforming activities, attempting to solve problems from its daily operation and to attain participating parties' separate and collective goals in an effective and efficient way (Håkansson and Snehota, 1995; Ford and Håkansson, 2006). The definition of network position can be divided into four aspects: 1) the function performed by the firm for the other firm; 2) the relative importance of the firm in the network; 3) the strength of the relationships with other firms and 4) the identity of the firms with which the firm has direct relationships (Mattsson, 1987).

A firm's network position can be seen as the firm's identity shaped by its interaction with counterparts in a structure of actor bonds, resource ties and activity links (Ford *et al.*, 1998). The identity, in other words, is determined by the firm's embeddedness and connectedness in a larger entity. Moreover, this identity is built on the perceptions of connected parties, e.g. how important is the firm in the eyes of counterparts. This suggests that the value of a firm's resources and its networking behaviour is perceived different among the counterparts, and in turn, affect these parties' network theories towards cooperation and competition (Ford and Håkansson, 2006; Johanson and Mattsson, 1992). Thus, a firm's network position is potentially a source of complexity and dynamics in business environments.

Role as dynamic aspect of network position

On the basis of the work by Anderson *et al.* (1998), it is difficult to examine network dynamics without relating the position concept to the role aspect. These authors argue that the role, acting on a change-process dimension, is an actor's intended and created behaviour which is expected by its counterparts. An actor is said "to occupy or have a position, but to perform the role or roles that come with the position" (Anderson *et al.*, 1998, p. 170). Hence, they consider business dynamics as a social process, in which network positions act as the stability dimension while roles as the change dimension.

A firm's change of role(s) will impact on resource utilisation and affect its network identity and the nature of involved relationships. The change may strengthen or endanger the firm's relationships, and subsequently, alter its competitiveness in the network. In this sense, the change of role produces not only relationship dynamics but also strategic influences. Andersen (2008) argues that a firm can improve its position and stay competitive by continually defining and redefining its role(s) in interaction

with others. He puts forth four types of rivalry strategies which can be differentiated by the changes in role sets in relation to others and which the success of practice entails a scanning of the surroundings and a consideration of possible countervailing response followed by the firm's strategic move.

Network position as value-creating unit

Johanson and Mattsson (1992) indicate that the positional perspective can be divided into the micro-level position and the macro-level position in which the former refers to an actor's relationships with individual organization while the latter takes into account the roles performed by the actor and its counterparts in a value-generating system. The latter view reflects the nature of resource interdependence and industry logic and emphasizes each individual actor's role in a relational structure of value co-creation (Håkansson and Snehota, 1995; Normann and Ramirez, 1993; Pfeffer and Salancik, 1978).

When the position of an actor is established in a network, its role in the division of labour becomes more distinct and its dependence on others increases as its interaction with these parties continues. One way to understand this embeddedness is to adopt the concept of technology bundles (Ford *et al.*, 1998). A value co-creating structure can be seen as a bundle of *product, process and marketing* technologies, in which each respectively refer to a firm's knowledge and ability to "design", "manufacture or produce" and "market and deliver" a product or service valued by other firms. The concept of technology bundle provides the explanation of how a firm utilizes its cooperative relationships in a variety of resource combinations to pursue efficiency and effectiveness in a chain of value-creating activities (Gadde and Snehota, 2000). In this sense, a firm may simultaneously participate in one or more sub-systems in a broader environment, the network.

Network position as power-exercising, strategizing location

The characteristic of interdependence in a network reveals that the division of labour equips each network position with a domain (e.g. product offered, clientele served or functions performed) that the actor has to fulfill and which connects it to others (upstream and downstream domains) in a smooth way, so as to minimize uncertainty and maximize self- and collective interests (Pfeffer and Salancik, 1978; Thorelli, 1986). According to Emerson (1962), it is the interdependence that an actor has a certain degree of "power" to influence the actions of others. The more dependent an

actor is on the other, the more power the latter has. Thus, power and dependence are crucial elements within the atmosphere of dyadic interactions and they are decisive for the future development of relationships (Håkansson, 1982).

A position is “a location of power to create and/or influence networks” (Thorelli, 1986, p. 40), implying that a firm can “strategize” to improve or enhance its performance in a business network by relating its resources and activities to others (Gadde *et al.*, 2003). It has to be noted that actors’ power exercise or strategizing is constrained by their incomplete knowledge (or learning by doing) and respective interpretation of interaction histories (Ford and Håkansson, 2006; Ritter and Ford, 2004). The outcome of exercising positional power, due to the connectedness of relationships, may bring the firm changes in its co-opetitive stance of its network or value system (Bengtsson and Kock, 2000), such as co-working with competitors to create market demands or strengthening a cooperative relationship by weakening or even ending another one.

Through its network position a firm is empowered to initiate a change, countervail a change initiated by others, and spread the influence of change to others connected. From a triadic level analysis Smith and Laage-Hellman (1992) put forward five strategic options of how a firm can restructure its business net: *by-pass* (avoid an intermediary relationship), *combination* (co-work with the other for the third party), *bridge* (exert influence on the third party via an intermediary relationship), *displacement* (replace an existing partner with new one) and *separation* (use another actor to interrupt a direct relationship). Regarding positions as nodes connecting flows of changes, Easton and Lundgren (1992) argue that there are several types of reaction for an actor to use to respond to a change, such as *reflection* (reject the change to the initiator), *absorption* (restrict the impacts of the change to organizational boundaries), or *transmission* (transmit the effects of the change to other members).

Every business organization engaged in a web of relationships has to confront the paradox of interaction: it strives for control over the counterparts and simultaneously it is influenced by the latter; but “control has its problems and when it becomes total it is destructive (p. 112)” (Ritter and Ford, 2004). The exercise of power could be the source of interfirm conflicts in which one party attempts to improve its position at the expense of the other who perceives this as interfering with the attainment of its goals (Andersen, 2008; Welch and Wilkinson, 2005). These conflicts may then lead to a state of power unbalance, the turmoil in the relationship. The turmoil could be mitigated if adaptive efforts of involved parties have been made to eliminate the

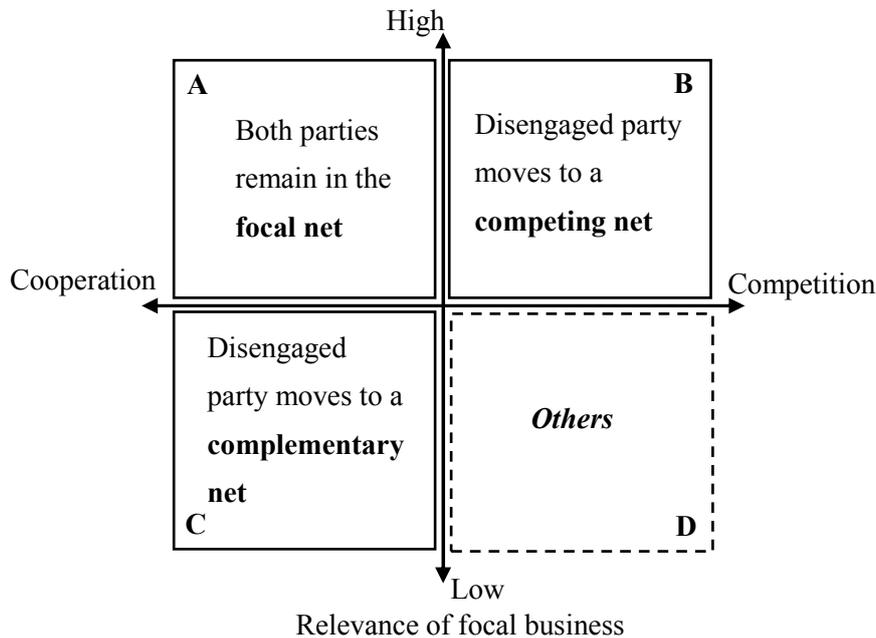
mismatches (Hallén *et al.*, 1991); otherwise the radical changes of relationship, e.g. relationship ending or new relationship building, cannot be avoidable. The radical changes of relationship in a network reveal that something in terms of actor bonds, resource ties and activity links has been mobilized and it can be distinguished from the previous structure of network (Lundgren, 1995).

A preliminary conceptual framework

This study seeks to uncover, from a network-level point of view, why and how an ended relationship can be reactivated and where the position of the disengaged party is located in the aftermath of the relationship ending. We consider that two issues are important in conceptualizing the relationship aftermath. Firstly, behind the emergence of a restructured or new network there is always a history (Ford and Håkansson, 2006). Secondly, the relationship energy created prior to the relationship ending will be retained in the aftermath period and travel through some linkages, e.g. personal contact, leaving the chance for the future reactivation of the relationship (Havila and Wilkinson, 2002).

Our framework is built on the concepts of an actor's domain (Thorelli, 1986) and its interdependence with others (Johanson and Mattsson, 1992; Pfeffer and Salancik, 1978) in which the uniqueness of its network position can be distinguished from the counterparts. By taking a focal actor's perspective on its development of a value system or net, the subset of network that embraces the embeddedness and connectedness of relationships (Anderson *et al.*, 1994; Mattsson, 1997), we are able to trace the disengaged party's position change in relation to the focal actor's domain with regards to resources used and activities performed in the aftermath stage. As a result, in the aftermath period the disengaged party could be indirectly connected with the focal actor via one or more relationships within and/or without of the focal net boundary, as shown in Figure 1. It is possible that a disengaged party may serve more than one value net simultaneously, such as the focal net and the focal actor's competing net.

Figure 1. Positional possibilities during relationship aftermath



 Due to little or no dependence with the focal actor's domain, the quadrant D could not be described either using a cooperation-competition continuum or the relevance of focal business.

A. Both parties remain in the focal net:

In this case the disengaged party's domain is still embedded in the focal actor's value-creating system. Although the direct relational tie is broken, there is a less but positive interdependence between two parties. Their resources are used and combined towards a cooperation end. For example, this situation may be the outcome of the counterpart's adoption of "separation" strategy (Smith and Laage-Hellman, 1992) that causes a supplier or customer to be a sub-supplier or sub-customer.

B. Disengaged party moves to a competing net:

The dissolved relationship forces the disengaged party to participate in a competing net, cooperating with the focal actor's competitor. Its relationship with the focal actor may be distantly connected via the joint members of the two nets, such as a key component supplier or a complementor. The disengaged party's domain could be complementary to the focal actor's, however, the exercise of power by the former may negatively influence the latter; and vice versa.

C. Disengaged party moves to a complementary net:

The disengaged party's entrance into a complementary net following its relationship

ending with the focal actor may result from its decision to terminate the current business (e.g. hardware business in PC industry) and to concentrate or establish another one (e.g. software business). Even though the dyad have ceased to trade, the positions they occupy in their respective value systems may display some degree of amiable atmosphere through indirect linkages or personal contacts because of their business relevance and complementarity, such as exchanging information in a technical forum or a standardization workshop.

D. Others:

Several situations belong to this quadrant in which it is almost impossible to build a linkage to the focal net on a cooperation-competition continuum. These include: the disengaged party has withdrawn from the existing network and doesn't join another, e.g. bankruptcy; the party has closed the current business and concentrates on or shifts to another business that has little relevance with the terminated one; and, the party is merged or acquired.

Methodology

The employment of case research for understanding contemporary business networks has received great attention in recent years (Halinen and Törnroos, 2005). We consider a single-case study is appropriate for this research due to its objective to achieve a deeper understanding about network dynamics within a specific context rather than building theories from multiple-case comparison (Yin, 2009). Moreover, this study adopts a longitudinal approach that takes into account time and temporality to study the change of embeddedness and connectedness of relationships within our network setting (Pettigrew, 1995).

Delimiting a suitable boundary is argued to be critical to the successful practice of network research (Halinen and Törnroos, 2005). The research adopts a focal actor's perspective on the development of its value system (or business net) for empirical investigation. The focal net perspective allows the researchers to capture the business relevance of the focal actor's important relationships and these relationships' connectedness and embeddedness in a larger entity (Anderson *et al.*, 1994; Ford *et al.*, 1998). Under this consideration, a focal company from the optical recording media industry is purposefully selected (Yin, 2009). This industry, which is characterized by rapid technological changes, serves a good platform for the observation of radical changes of relationships.

The focal actor (company F) under study is a Taiwan-based OEM, specialized in manufacturing the optical recording media, e.g. CD-R (CD recordable) and DVD-R (DVD recordable). Established near the end of 1980s, company F has experienced three major technological changes from CD-R to BD-R (Blu-ray disc recordable), in which each change resulted in radical change of relationships in the value net. By reconstructing the formation of company F's value nets based on each technological generation, we are able to examine the differences in the relational structures before and after the arrival of technological change; and most importantly, to study why and how an ended relationship can be later activated. To facilitate the empirical examination, a relatively stable value net based on CD-R technology is firstly reconstructed. This value net consists of company F's supplier (company S1) and customer (companies C1, C2 and C3) relationships, in which S1 is a Swiss-based supplier of dye material (key material in media manufacturing) while C1, C2 and C3 are business customers (or technology vendors) based in Japan. This value net reflects the industry logic and takes into account the concept of technology bundle (Ford *et al.*, 1998; Johanson and Mattsson, 1992).

The reconstruction of company F's value net evolution relied on semi-structured, face-to-face depth interviews, 52 in total, with managers from companies in the focal net. These interviews were carried out in two stages, respectively in 2007 and 2008. The first stage of interviews was carried out mainly with company F to identify significant interaction episodes which were related to radical changes of relationships. Another purpose was to construct a value net, by including F's relationships with S1, C1, C2 and C3, as the basis for the comparison with later reconfigurations of the value net triggered by the arrival of technological change. The second stage was to reconstruct the evolution of the value net by interviewing company F and its counterparts. The interviews were transcribed and then analyzed using QSR software NVivo 7. The codes developed using this software enabled us to study the interdependence structure of the focal net and identify significant interaction episodes, so as to inductively develop the history of the focal net evolution. In order to develop a near realistic view on the focal net evolution, archival material was consulted and follow-up mails were sent.

An empirical illustration: Three reconfigurations of the value net

A relatively stable value net based on CD-R technology

Company F started its OEM-customer relationships with companies C1 and C2 in late

1998 and late 1999 respectively during which F took almost a year, including sample approval and production-site audit, to acquire an OEM business agreement from C1 while after C2's survey of three candidates, F won out and became C2's strategic partner. Both companies C1 and C2 involved in the optical recording media industry not long after the CD-R specification was released by Sony and Philips in 1990; they had built their reputations and influential brand images in the industry. Their relationships with F, due to F's large production capacity and superior manufacturing technology, allowed them to focus their attention on marketing activities to cope with intensified competition after 1997. On the other hand, company F's cooperation with C1 and C2 enabled it to pursue economies of scale in the media production, gain knowledge of product and brand management and enhance its R&D capability.

A major difference between company F's relationships with C1 and C2 was the dye material used in the CD-R volume production. A dye material (chemical formulation) was used in a clean-room process to coat each optical disc, which would be burned by laser beam in an optical drive (or recorder) to backup data. This material was crucial not only to the production yield rate but also the CD-R compatibility with drives and the longevity of data storage. Besides the dye material was a key element concerning the boosting of the media's recording speed, which was an important selling point of a new product and which determined a producer's competitiveness (e.g. product differentiation). Company F used its in-house dye material to produce CD-Rs for C1 while using C2's key materials to produce exclusively for C2's brand. Perceiving the importance of dye materials, company F introduced S1's dye material in some of its production lines in 2000, so as to increase the diversity of product lines and to enhance their knowledge of dye materials. At that time, F used S1's material to produce CD-Rs for its minor customers.

In 2000 company F built its OEM-customer relationship with C3, who had previously developed its relationship with R1, a Taiwan-based manufacturer and one of F's main rivals in OEM businesses. In order to satisfy C1, C2 and C3's needs, F operated different production areas in accordance with their respective quality requirements, under the control by different project teams. After improving the procedures and routines between these relationships through several shipments, a relatively stable value net based on CD-R technology emerged, as Figure 2, a snapshot of company F's focal net in 2001. Within this focal net, some actors were playing multi-roles in the value system, shown in Figure 3. For example, F used its in-house dye material to produce for C1, C3 while C2 marketed its branded CD-R produced with its own developed materials handed over to F. Unlike S1's cooperation with R1, F and C2's

dye materials was not shared in other value nets.

Figure 2. Company F's value net in 2001

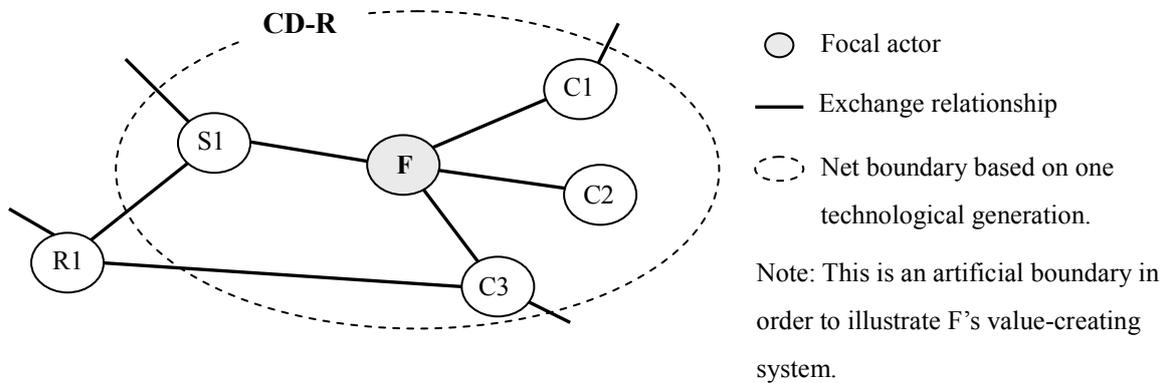
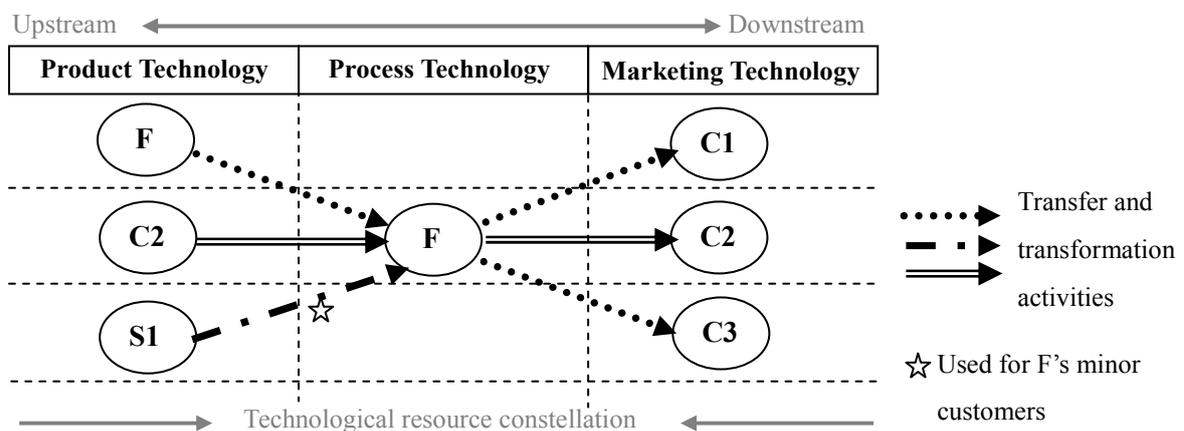


Figure 3. Roles played, resources aggregated and activities performed within the value net



The first reconfiguration of the value net

The rapidly changing conditions and fierce competition made company F hard to maintain its value net. This was the result of a mushroom of players after the Millennium, including production equipment providers, raw material suppliers, media makers and technical consultancies. Among these players, some partnered to provide “turnkey solutions”, allowing the newcomers with little technical background to volume produce CD-Rs easily. Although the market demand had been rocketing and company F's CD-R shipments had been growing (especially for C1), company F and its customers' profitability had been squeezed because of a price war, particularly after 2001. Then each member within the value net developed its own expectation towards the future that was reflected in the subsequent actions.

In order to improve profitability, the attention of most companies was focused on releasing new products ahead of competitors and reducing production and operation costs. As the CD-R technology reached its technological limit, company F confronted a bottleneck in upgrading its CD-R recording speed with its in-house dye material near the end of 2001. Company C1 was very concerned about this since this delay would disturb their marketing plans. This event was put an end with a compromising decision: switching to a new dye material which was developed by S1 but fine-tuned by company F. With this solution C1 was able to be one of the leading brands and to release new CD-R products with the latest recording speed.

However, this achievement was propagated by S1 which allied with a UK-based technical consultancy and a Germany-based equipment maker as a turnkey provider; and which had exchange relationships with F's rivals, such as R1. C1's leading advantage was soon countervailed by its rivals whose CD-R products also adopted S1's material. While S1's dye material became the dominant solution for the CD-R production, C2 still insisted on its in-house solution, arguing that it was the best way to retain the feature of its branded CD-R, although it suffered from further intensified competition initiated by the prevalence of S1's dye material.

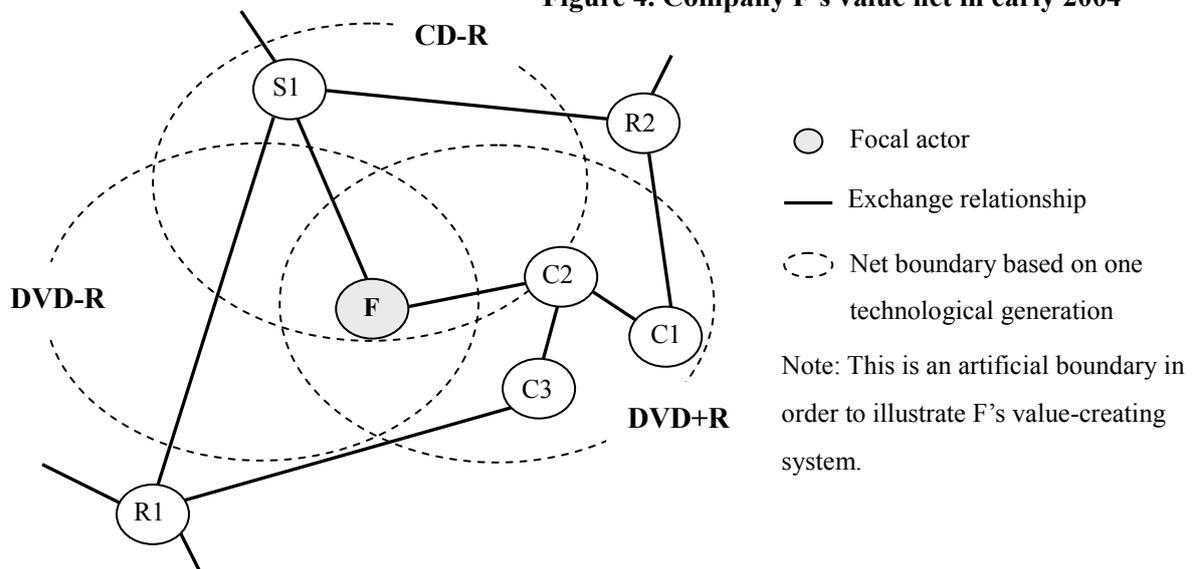
To get rid of this disadvantageous situation, companies F, C1 and C2 developed their respective countermeasures. A crucial decision made by F was the recruitment of its vice president in mid 2001 who was invited from a well-known IT company to devise new operational strategies. These strategies included improving the CD-R profit margin by a price markup on OEM quotations, speeding up the preparation of the next generation media (DVD recordable disc), developing its own consumer media brands and reviewing its OEM customer portfolio using new criteria. To facilitate carrying out these strategies, company F further set up a marketing team.

Decreasing profitability directed C1's attention on restructuring its organizational activities. A remarkable action it carried out was the shutdown of its production factory in the U.S. and the subsequent sale of production equipment in the end of 2001. Company C1 expected its relationship with F could be strengthened through the trading of its used production equipment. However, this request was refused by F's new vice president who believed that the used CD-R equipment would bring nothing but burdens. F's response frustrated C1. Their dissatisfaction was further deepened by F's CD-R markup in late 2002. Although company F regarded C1 as an important OEM customer and they had several top level management meetings with each other, they failed to prevent C1 from building a relational tie with R2, which was a

Taiwan-based media maker and F's main rival, and more importantly, which did C1 a great favour by purchasing its used production equipment without any conditions. Company F's relationship with C1 faded away in early 2004 as R2 was ready to handle C1's demands.

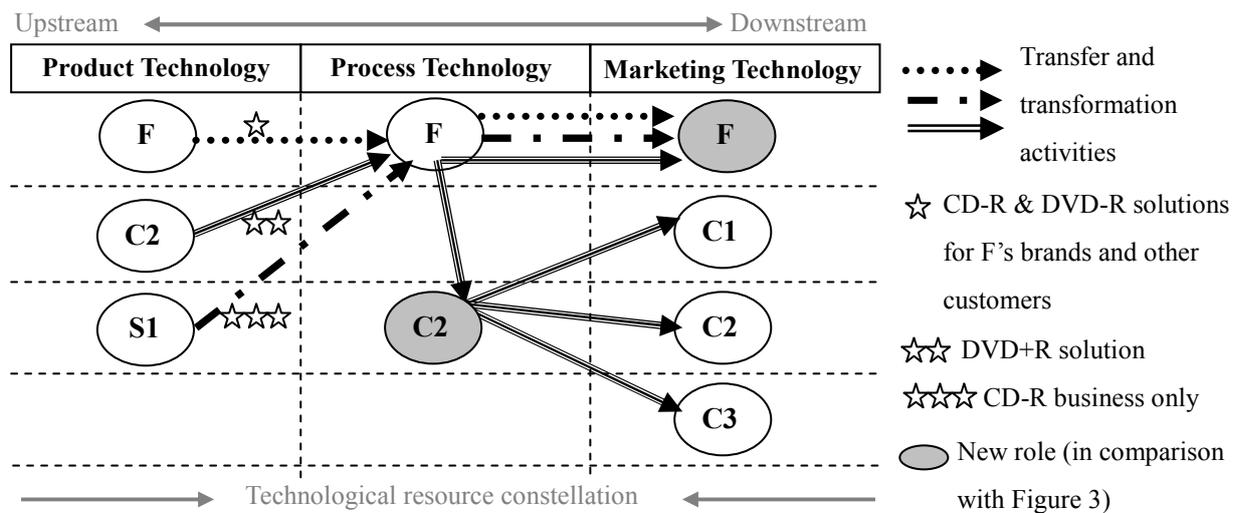
Company C3 became a victim of F's new criteria for selecting OEM customers. The main reason was that C3's monthly CD-R orders to F were not large and unstable. Their exchange relationship discontinued from mid 2003. Unlike C1 and C3, C2's relationship with F was enhanced due to their strategic alliance from 2002 to promote the DVD+R² media (the rival format of DVD-R) created by the DVD+RW Alliance in which C2 was one of the leading members. C2 not only maintained its media brand but also worked closely with F as an OEM entity in which C2 was in charge of sales and marketing functions and quality control while F took care of media manufacturing supported by C2 in terms of key materials and some technical know-how. This combination resulted in a large volume of high quality DVD+R products and thus allowed C2 to acquire orders from major media brands, including C1 and C3. In addition to the DVD+R media, company F also volume produced DVD-R using its in-house developed dye material.

Figure 4. Company F's value net in early 2004



² The DVD Forum, established in 1997, is an international organization that aims to define, disseminate and verify DVD format (e.g. DVD-R or DVD+RW) and to license DVD format logo while its rival camp, the DVD+RW Alliance, was established in 2002 with similar objectives but for DVD+R and DVD+RW media. The format competition between these two camps is also recognized as “minus” (or dash) versus “plus” standard.

Figure 5. Roles played, resources aggregated and activities performed within the value net



These net members' respective actions resulted in the first reconfiguration of the value net in early 2004 (see Figure 4) and the changes of some actors' roles (see Figure 5). As shown in Figure 4, company F's relationships with C1 and C3 were indirectly connected via C2 because of DVD+R businesses. As for S1 who had achieved a very successful CD-R dye material business, it failed to migrate to the next generation of technologies. The key was that the company, whose dye material for optical recording media production was just one of its product portfolios, missed the best timing to release its new material for the DVD recordable media due to the changes in its top management team.

The second reconfiguration of the value net

Despite broken relationships, company F's sales people still kept in touch with their contacts in C1 and C3, hoping there would be chances to do business with each other again. Through this channel C3 was seeking the possibility to cooperate with F on the DVD-R business using its newly developed dye material. The deteriorating situation in the CD-R business made C3 aware of the importance of embracing the new optical recording technology. With the chemical background in other businesses C3 invested resources in the research and development of dye materials for the DVD recordable media, attempting to enhance its competitive position in the industry. C3 thought it would be a boost to its profitability if its dye material could be adopted by F who possessed a considerable production capacity.

C3's dye material samples were rejected by F several times. In addition to quality issues, an important factor was F's R&D director's persistence of using the in-house

dye material for the DVD-R volume production. The director viewed that sourcing an external dye solution would impair the firm's technical capabilities as well as its competitiveness. However, managers from the sales and the production departments disagreed with this by arguing that using a qualified external dye solution could allow the firm to get more OEM orders. This conflict was suppressed by the R&D department's ability in timely releasing the latest version of dye material for the DVD-R production, satisfying the needs from markets.

The delay in releasing the latest version of DVD-R with higher recording speed in mid 2004 changed company F's postures. In the DVD recordable business, each manufacturer's new version of DVD-R and DVD+R discs must be tested and approved by the DVD Forum and the DVD+RW Alliance respectively, so as to use the format organization's logo. This delay was caused by F's failure to opportunely upgrade the DVD-R recording speed by modifying its dye formulation. Because of this, the momentum of F's own brand and OEM business was suspended. The pressure from the sales department and customers forced F to approach C4, a Japanese-based technology vendor who possessed commercial dye materials for the DVD recordable media production, an influential media brand and a partnership with R2 for OEM business. C4 previously contacted F for the dye material business in 2002 but ended up in nothing due to F's reluctance to adopt external dye solutions. Besides this unhappy experience, C4 considered that selling its dye materials to F at this timing would impair its relationship with R2. They were also afraid that their know-how would leak out, particularly to C2, F's strategic partner. Without other choices, company F then turned to C3. Meanwhile, F's R&D director was transferred to another business group.

Company F's need to upgrade its DVD-R products restored its relationship with C3 (see Figure 6). With C3's dye material and its negotiation with the DVD Forum, F's higher speed DVD-R was soon certified. In order to make F keep using its dye material, C3 placed DVD-R orders with F (see Figure 7 for C3's change in its role sets). C3 hoped that its re-cooperation with F was able to countervail C4's position in the industry, in which C4 was its main competitor in the dye material business. On the other hand, company F's adoption of C3's material tempted C2 to source products from F again. In the face of the fierce competition in which a variety of product lines based on different recording technologies co-existed, C2 thought that the relationship reactivation with F could allow them to be more flexible in marketing strategies.

Figure 6. Company F's value net in the end of 2004

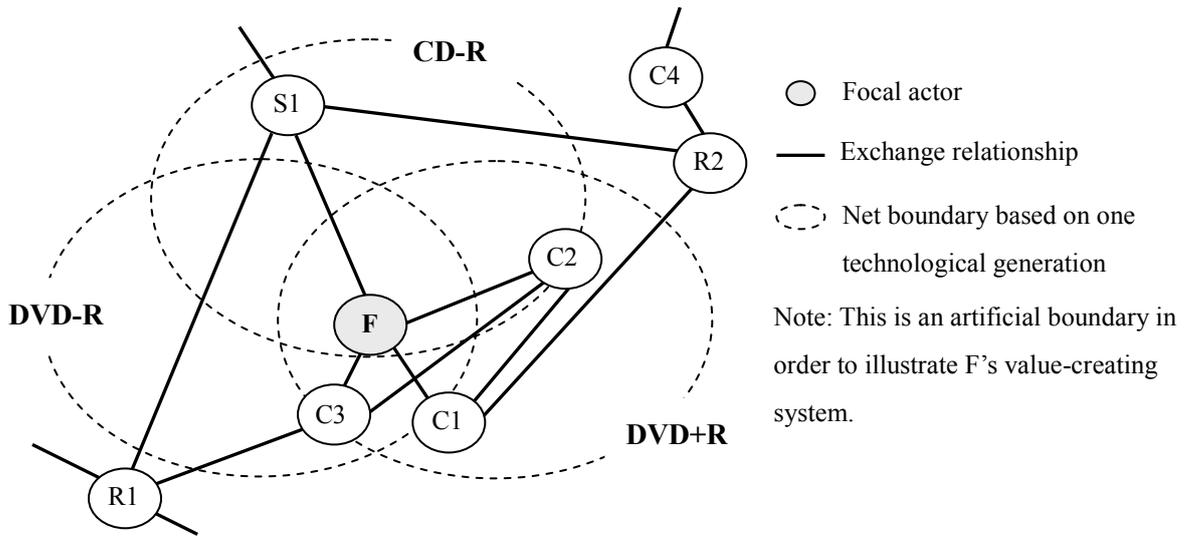
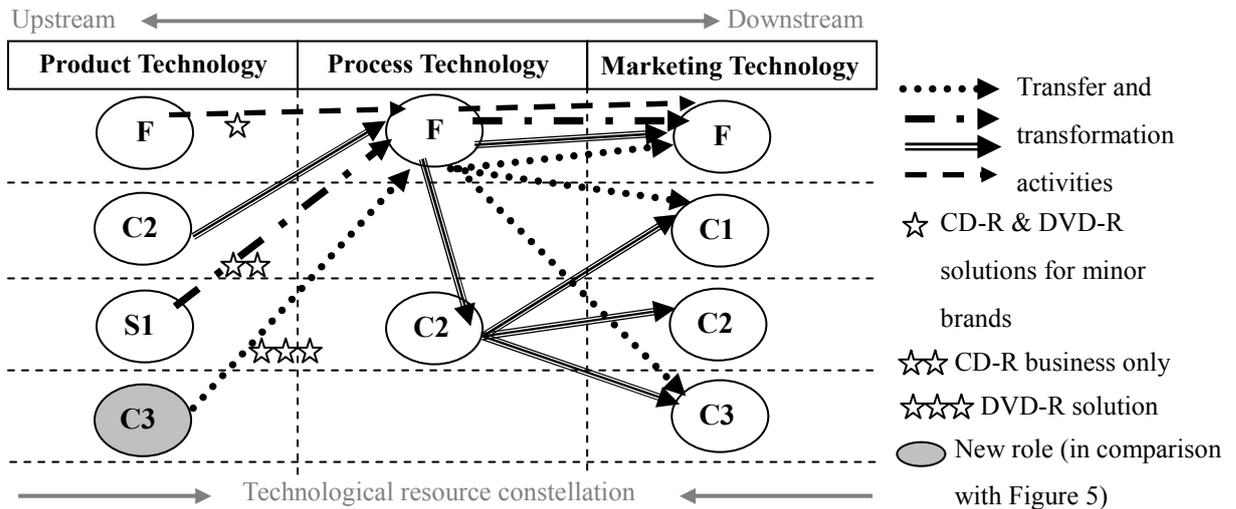


Figure 7. Roles played, resources aggregated and activities performed within the value net



The third reconfiguration of the value net

The format rivalry between DVD-R and DVD+R began with the establishment of the DVD+RW Alliance in early 2002. This battle continued as both camps shifted their focus to DVD DL (DVD Double Layer) in which a DVD+/-R DL disc had a double recording capacity of a DVD+/-R (single layer) disc. The plus camp was leading in the commercialization of DL products in early 2005. The appearance of DL technologies brought existing firms more challenging tasks since the co-existence of different technologies (e.g. CD-R, DVD+/-R and DVD+/-R DL) required a more prudent management, particularly when the new products with advanced technologies caused the cost structure of the existing products to be squeezed.

As shown in Figure 8, another restructuring of F's value net took place in late 2005. Although F's cooperation with C2 created a lead in releasing DL products that satisfied their customers, e.g. C1a and C3, their business model was soon confronted by difficulties in maintaining profitability. The decreasing DVD+R price made their business model hard to sustain the cost structure. Moreover, C2's weak sales team was not able to manage its own brand and OEM business in an efficient way, resulting in a more difficult situation. C2's customers attempted to approach F directly by skipping C2, so as to get a more competitive price. Some customers thought it was ineffective to source F-made "plus" media via C2 while doing businesses with F directly for "minus" media. Finally, C2 gave up its role as an OEM and returned to the roles as it played in the CD-R business (see Figure 9).

Figure 8. Company F's value net in the end of 2005

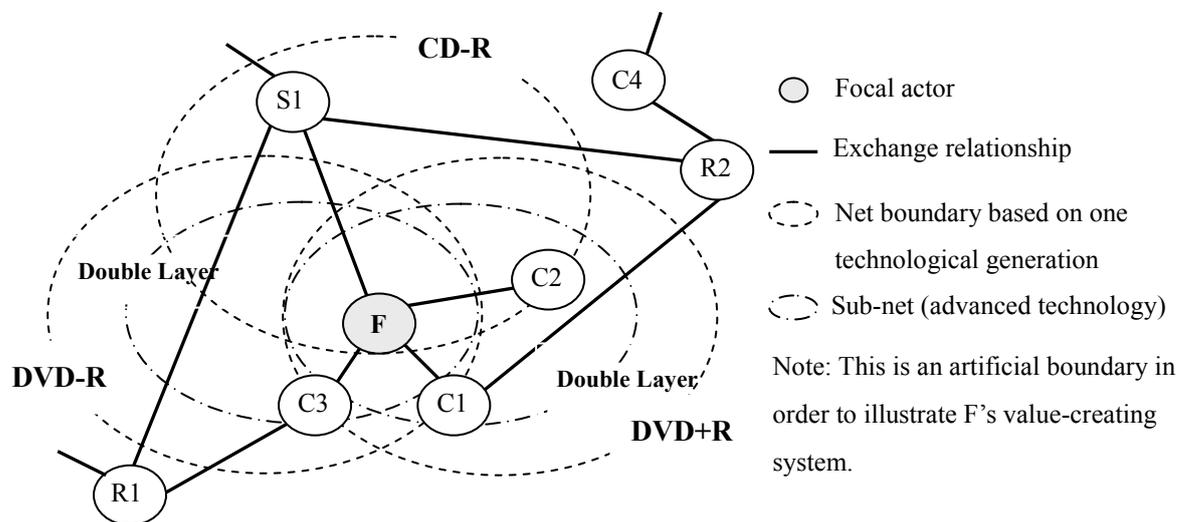
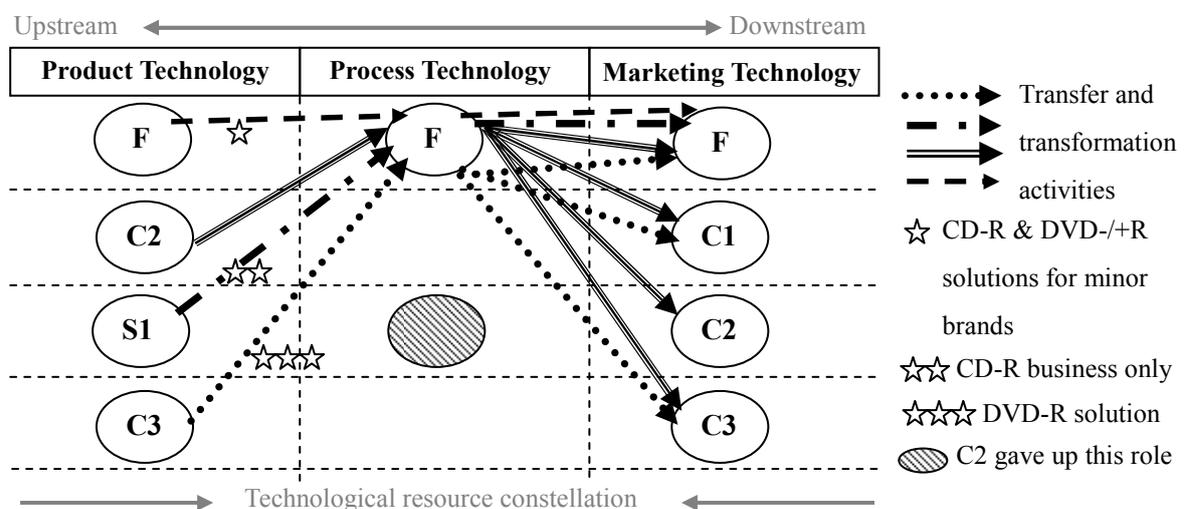


Figure 9. Roles played, resources aggregated and activities performed within the value net



Concluding discussion

This longitudinal case study echoes what Ford and Håkansson (2006) depict business interaction as a lumpy process that produces relationship dynamics in a network. Our empirical results also confirm that the dynamics are the consequences of actors' strategizing or power-exercising (Gadde *et al.*, 2003; Welch and Wilkinson, 2005) based on their limited knowledge of networking and respective interpretations of past interactions (Ford and Håkansson, 2006; Ritter and Ford, 2004) in an environment in which the cooperation and conflicts co-exist (Bengtsson and Kock, 2000; Håkansson, 1982). In this vein, an actor should not try to evade ending a relationship but should take relationship ending and reactivation as choices of improving its competitiveness in the networking environment.

A relationship ending can be deeply understood using a network perspective in which an actor's position is seen as a node connecting not only heterogeneous resources (including business relationships) but also influences generated from connected dyads (Anderson *et al.*, 1994; Easton and Lundgren, 1992). The antecedents to a relationship ending, such as dissatisfaction or unprofitability (Hibbard *et al.*, 2001; Ping, 1999; Tuusjärvi and Blois, 2004), may result from third parties' actions or reactions, e.g. S1's propagation of its dye material. The change influences are carried by interaction episodes which are perceived and interpreted by involved parties. It is an actor's continuous interaction with connected parties that produces a mix of relationship burden and energy (Håkansson and Snehota, 1998; Havila and Wilkinson, 2002), leading to a limited or constrained view of networking. The limited knowledge is often the source of positional misfit, e.g. strategic misfit between F and C1 towards the arrival of DVD technologies.

A broken tie may not ruin an actor's positional power (or influence) over the other to a great extent while the dyad are still connected via third parties, particularly when the disengaged party remains embedded within the disengaging party's value net. Our case shows when the disengaged party's business domain is connected within the value net boundary in the aftermath stage, its position and the focal actor's position co-exist in a structure of interdependence. For instance, although F's relational ties with C1 and C3 were broken, it required their orders to keep its partnership with C2 viable and meanwhile, C1 and C3 needed F's production capacity and manufacturing technology to stably supply qualified DVD recordable media. This interdependence through indirect connection can be regarded as a concrete form of relationship energy (Havila and Wilkinson, 2002), allowing the involved parties to keep exploiting the

aggregate resources and knowledge and keep learning from each other.

The reactivation of an ended relationship needs to be built on strategizing efforts. An actor's strategizing is to identify the scope for action to influence its network position (Gadde *et al.*, 2003), enabling resource mobilisation that will alter the nature of fitness between positions. That is, strategizing is to change the interdependence structure in order to facilitate attaining one's goals. It thus creates the opportunities for relationship reactivation. Here, our empirical study suggests two things. One is that an actor's strategizing efforts can be self-initiated or other-directed, such as F's partnership with C2 on the DVD+R business. The other is that an actor can utilize one of its relationships to solve the problem of another's but may bring about more problems; or a successful relationship at one period of time may lose its advantages at another, causing high costs or becoming unprofitable to maintain. An actor's enhancing, ending or reactivating a relationship, therefore, has to take into account the nature of interconnectedness of relationships.

Several managerial implications are derived from the above discussion. Firstly, a firm would benefit from analysing the possible outcomes of ending a relationship at a network level, which in turn results in a better understanding of how to allocate resources in accordance with its portfolios of relationships. When a network view is considered, a firm's resource used by some indirect relationships at a certain period of time would be more beneficial than used by direct relationships. Secondly, the analysis of radical changes of relationships at a network level highlights the importance of a firm's dynamic capability (Baraldi *et al.*, 2007; Teece *et al.*, 1997; Ritter and Gemünden, 2003). A successful management of interfirm relationships is to maintain a "positional flexibility" which can be viewed as an embodiment of dynamic capability. It is about a firm's ability to mobilize its and its counterparts' resources and activities; and when necessary, to be mobilized by others. Last but not least, a firm's relevance of business domain with the disengaged party and their interdependencies are important criteria for a relationship to be reactivated. Without a positional fit and resource-dependence, the reactivated relationship may backfire.

To sum up, this research contributes to a greater understanding of relationship dynamics by relating a company's position change to its networking environment, the markets-as-networks. A longitudinal perspective reveals that a firm's strategy of relationship portfolios requires a consideration of the dynamic nature in the business interaction at the macro-level. To enlarge the knowledge of this area, future research could focus attention on a comparison of net evolution between a focal net and its

competing net within a network (or industry) or between two nets from different network settings, so as to gain more similarities and differences with regard to relationship dynamics.

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