

INNOVATIVE COORDINATION OF AGRIBUSINESS CHAINS AND NETWORKS

E.F.M. Wubben
Geoffrey Hagelaar

Abstract

To facilitate scientifically grounded innovative forms of strategic network coordination, this paper integrates two major bodies of literature on competitive advantage. The two bodies of literature are the industry-oriented outside-in approach, and the competence-oriented inside-out approach, here homogenized along the dimensions of degrees of firm embeddedness, respectively, the broadness of shared resource bases. The elements detailed are interfirm relationships, resource bases, network governance instruments, coordination mechanisms, the impact of events on network structures, and the active mobilisation of actors and resource. Thereby, the paper is able to detail 5 generic types of business networks. Next, it relates 21 network governance instruments to type of partnerships (binding vs loosening), forms of interaction (cooperative vs opportunistic). The realized reduction of network complexity enhances conceptual transparency and increases the instrumental usage of this research for effective network coordination by businesses. An integrated case illustrates the usefulness of the various concepts and the coherency of the different elements.

KEYWORDS: Agribusiness chains and network coordination, network theory, innovative institutions.

INTRODUCTION

In difficult times organizing effective business networks becomes one of the key tasks of companies in order to (re-)gain competitive advantage, which requires clarification of the different elements in networks coordination. Networks have a long and diverse history in business, society, and in research, but it is only of recent date that the focus of business, consultancy and research shifts towards its value creation and value delivery (Ritter et al., 2004). That is, we see a rise of interest in business networks, towards managing collaborative arrangements to gain or sustain competitive advantage vis-à-vis outside competitors. In the emerging business world of chains and networks one observes a wide spectrum of collaborative networks, for example R&D- networks amongst pharmaceuticals, standard setting networks in consumer electronics, flexible industrial districts, guanxi networks, airlines' global hub-and-spoke networks, physical electricity grids, optimized retailer supply chains, and virtual mobile phone networks. Firms experience increasing difficulty to maintain their competitive positions by relying exclusively on current activities realised by owned resources and capabilities. 'A business enterprise looks more like a linking unit where its strategic attributes lie in how it connects other market participants to each other.' (Hakansson & Snohota, 1995). The positive relation between networks and competitive advantage seems to be uncontroversial. Controversial are the sources and determinants of the competitive advantage of networks and their consequences for understanding different types of types, and the normative structuring on networks, i.e. design, management, and governance. By detailing 5 business network it is our aim to enhance conceptual transparency and increases the instrumental usage of network

research in structuring business networks. The application to the Dutch horticultural network serves as illustration.

Regarding the sources and determinants of competitive advantage there are two broad perspectives.: the inside-out and the outside-in perspective, each largely ignoring the insights developed by the other. The industry-centric outside-in perspective focuses on the influence of the interfirm relationships to explain the behaviour of individual firms and networks of firms. The competence-centric inside-out perspective focuses on the resources and competences of firms and networks. They appear as competing explanations of competitive advantage. The inside-out perspective focuses on how broadly competences of individual firms are intertwined for the collective aim of the network. The outside-in perspective suggests that the organization of networks occurs either through firm-individual responses to external competitive pressure or through collective, embedded firms. By this paper we detail the insights of viewing these as complementary explanations of business networks.

In this paper, taking an strategic approach, we argue that integrating these two perspectives is necessary to gain more overall insight of the complexity of organizing networks to achieve competitive advantage. Indeed both perspectives, although paying attention to different aspects, focus on the same issue. For instance, the inside-out concentrates on the fit between the firm strategy and their business environment, whereas the outside-in perspective takes other factors in consideration like the business relationships and ties. We will use illustrative typologies, for a taxonomy brings a systematic grouping of items, using a small number of criteria, making it easy to distinguish and discuss cases. It facilitates the justified reduction of network complexity, which is one of the most important tasks in chain and network management (Hanf & Dautzenberg, 2006, 81). Combining the two bodies of knowledge will result in a theoretical framework in which two dimensions of networks' organization will be related as two axes to present different types of networks. The resulting quadrants define four types of network organization which locus will be reflected in the quadrant names.

To assess the usefulness of the selected concepts every step will be illustrated by an application of the presented concept. The illustration is from the Dutch horticultural sector, more in particular its potted plant sector. The Flowers and Food cluster is known for long to be the strongest cluster of the Netherlands (Snijders et al., 2007), featuring cut flowers, potted plants, bulbs and vegetables as its most competitive sectors thereof (Jacobs et al., 1990; Porter & Van der Linde, 1995; Porter 1998), looking at the relative share in international exports (Jacobs & Lankhuizen, 2006); and the Balassa index (Hinlopen & Van Marrewijk, 1999). The potted plant sector suits our objective, because its firms combine efforts in business networks such as cooperatives, boards, councils and trade associations (Porter, 1998). Nevertheless, although the value of Dutch potted plants exports amounts to EUR 1.1 bln per year, that is 70 percent of the exports by European countries, the projected figures on consumption patterns and export growth indicates that the Dutch may loose export market share. Therefore, the sector has, united forces in the platform Flor-I-Log to formulate and implement strategies to strengthen its position in Europe. The illustrative sections will focus on the following question: What new organizational forms can be implemented in the Dutch PP-sector to foster its ambition?

BUSINESS NETWORKS: WHAT ARE WE TALKING ABOUT?

Network research is diverse, for founding disciplines such as sociology, communications, psychology, economics, biology and medicine, logistics and organizational behavior, bring about a proliferation of terms, concepts, mechanisms, and studies, resulting in a multitude of partially contradictory results (Miles & Snow, 1986, 62; Contractor et al., 2006)). For example, it takes Todeva (2006) 16 pages to explain no less than 89 concepts. Moreover, when we look for articles with network(s) in the title, within the international database SCCL, we already track 5773 articles in the social sciences in the period 1995-09/2007, 327 articles of which are printed in the top-13 scientific business journals. At this moment, network research orients itself to different levels of analysis, that is the personal network, firm internal or intrafirm networks, dyadic or relationship level, supply chain, business network, industry network, the country level, and even the global level of analysis (Ritter et al., 179; Hagedoorn, 2006; Contractor et al., 2006). The literature on networks is dominated by descriptive empirical studies, which comes at a loss of providing few widely applicable lessons (Croom et al., 2000; Harland et al., 2001). Although, there is no prevalent theory of networks (Sacchetti & Sugden, 2003), business-oriented network literature tries to understand behavior of firms via different forms of embeddedness (Granovetter, 1985) and their complex interdependencies (Hagedoorn, 2006), to arrive at normative conclusions.

Interfirm relations can create value in combining firm resources, knowledge, and assets which will be difficult to be imitated by competitors. The value created originates from network characteristics, like relationships and the flow of resources between independent firms (Jones et al., 1997). Despite sectoral and disciplinary differences, business networks have a number of defining features; a network requires organizations and/or individuals, with a degree of autonomy, systematically interconnected, and who have common goals, or interests (Pitsis, 2007). Business or strategic networks may be further characterized by the fact that the network is an intended arrangement between actors, lacking an organizational authority to arbitrate (Moller & Svahn, 2003). Based on a literature review, Todeva defines Business networks as 'sets of repetitive transactions based on structural and relational formations with dynamic boundaries comprising interconnected elements (actors, resources and activities). Networks accommodate the contradictory and complementary aims ...and facilitate joint activities and repetitive exchanges' (Todeva 2006, p.15). In their overview on business networks. Ghisi & Martinelli (2006) offer some 17 definitions of business networks. In this paper we use the term networks for business networks, broadly speaking. We define a network as autonomous firms, who co-operate systematically on their complementary/shared objectives, with joint activities and repetitive exchanges to add value for clients.

EXPLAINING COMPETITIVE ADVANTAGE AT NETWORK LEVEL

The most general idea of network literature is that inter-firm relationships can create relational rents which go beyond the efficiency arguments of transaction cost analysis. Although the understanding of networks has a long history in research, it is only of recent date that the focus shifts towards their role in value creation and delivery, i.e. in managing business networks (Ritter et al., 2004, p.175). Interfirm relations can create value in combining resources, knowledge, assets which will be difficult to be imitated by competitors. This added value originates from network

characteristics like inter-firm relationships and the flow of resources between independent units (Jones et al., 1997).

Roughly speaking, there are two major bodies of theory and research on competitive advantage (Wit & Meyer, 2004). These two major bodies are represented by the outside-in and inside-out perspective. From the outside-in perspective competitive advantage is viewed as a firm's ability to adapt to industry forces. Some well known concepts are Porter's five forces-framework (Porter, 1980), and the strategic group analysis (McGee & Thomas, 1986). This industry centric view, in other words, explains competitive advantage of a firm or network which is triggered by activities of competitors and other industrial parties.

The inside-out perspective views competitive advantage from the angle of competence of a firm or network (e.g.. Grant, 1991) The level of development of valuable resources and competencies and capabilities assembled within a network determines whether or not a network can compete with another network. This competence-centric approach argues that resources, skills and capabilities supports and stimulates competitive advantage. Network creation and orchestration suits this view of taking the lead on the basis of superior competences.

What happens when we treat these two perspectives as parallel explanations for competitive advantage? Both perspectives focus on how competing economic activity, in this case coordinated within a network, should be managed. The inside-out perspective within a network setting can be described as the diversity of resources that can be accessed (see Toms & Filatotchev, 2004): extensive – narrow resource base. The outside-in perspective highlights the fact that embedded firms within a network may take others more as competitors or more as partners, together responsive to developments in their environment: discrete – embedded (Meyer, 2007). Our objective is to present an integrative framework to explain the relation between business strategy and organizing networks.

COORDINATING ECONOMIC ACTIVITY FOR COMPETITIVE ADVANTAGE: WHAT IS OUR NETWORK POSITION?

Our structuration of networks is based on two dimensions. These dimensions give managerial answers to the question how to manage economic activities; (1) by managing the access to resources of involved parties and (2) by managing interfirm relationships. Additionally, we will detail a set of network alternatives where the geographical aspect is explicitly dealt with. .

Interfirm relationships: Discrete – Embedded

The concept embeddedness focuses directly at interconnectedness of parties in a network and in line with that interconnectedness of relationships. The IMP-group strongly advocates this approach to business (Anderson, Hakansson, Johanson, 1994, Hakansson & Snehota, 1995). Collaboration is directed at strengthening the position of partners; adding value. Every relation balances between competition and partnership. It is argued that companies embed themselves intentionally in a web of durable collaborative relations whether or not those relations are loosely or more tightly coupled. Embeddedness holds economies of time, integrative agreements, allocative efficiency, and complex adaptation. However, embeddedness can derail economic performance when the network becomes more and more dominant (resource base is narrow); the firms receives information and absorbs info on structural changes and shocks too late (Uzzi, 1997). The discrete organization perspective points at the idea, inspired by neo-classical economists, that organizations are fundamentally driven by

self-interest. Competition is, from this perspective, the natural state of affairs. Bargaining for price between buyers and sellers, grasping opportunities to get the upper hand over rivals etcetera motivate companies to strengthen the competitive position over others. Collaboration is aimed at inhibiting competition (De Wit et al., 1998, 509-511). An overview of these approaches is given in Table 1.

When we relate interfirm relationships to networks, one may divide networks along two dimensions, i.e. between dynamic vs routinized supply networks, the degree of network influence of the focal firm as the second differentiator (see figure 1)(Harland & Knight, 2001). This figure, grounded on extensive and diverse data gathering, places the key activities in the corners of the 4 boxes. For example, dynamic networks tend to compete primarily on innovation with rapid technological change. Partner selection and decision-making are key in

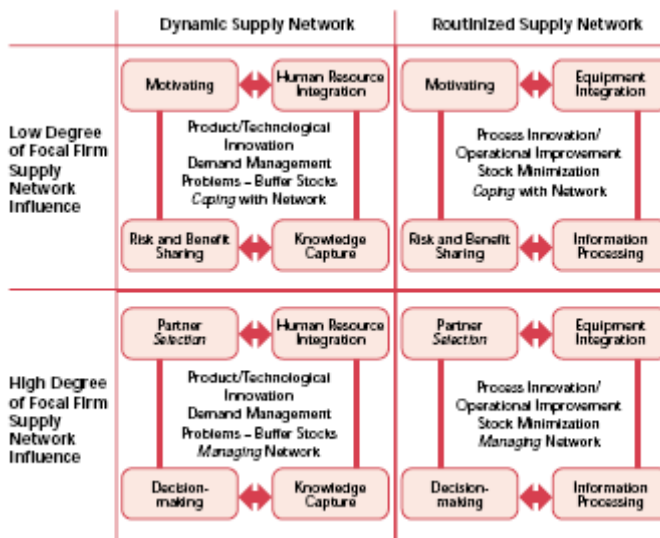
TABLE 1

2 Views on interfirm relationships Source De Wit & Meyer, 1998, 2004, p.512

	Discrete Organization Perspective	Embedded Organization Perspective
Emphasis on	Competition over cooperation	Cooperation over competition
Preferred position	Independence	Interdependence
Environmental structure	Discrete organizations (atomistic)	Embedded organizations (networked)
Firm boundaries	Distinct and defended	Fuzzy and open
Inter-firm relations	Arm's length and transactional	Close and structural
Interaction outcomes	Mainly zero-sum (win/lose)	Mainly positive-sum (win-win)
Interaction based on	Bargaining power and calculation	Trust and reciprocity
Network level strategy	No	Yes
Use of collaboration	Temporary coalitions (tactical alliances)	Durable partnerships (strategic alliances)
Collaborative arrangement	Limited, well-defined, contract-based	Broad, open, relationship-based)

networks with a dominant focal firm. The high level of influence of this orchestrator was caused by two factors: 1) His direct added value to the network or innovative capability was large. 2) His provision of access to the rest of the network (bridging) was considered critical by other firms. It may be in either dynamic or routinized networks that a focal firm is able to dominate, manage the network. This firm may hold a mainly positive sum perspective open to reciprocity and network strategies. However, firms state in interviews that when focal firms do not strongly influence the network, they typically find themselves having to cope with network operations (Harland et al., 2001) , taking mainly a zero-sum approach, where power and transactional relationships dominate. There, motivation and allocation of costs and benefits are critical issues at network level. There is positive and negative evidence on success

FIGURE 1 2001.



rates of dominated alliances vs balanced alliances (Nooteboom, 1999, 83). Key networking activities in routinized supply networks are equipment integration and info processing to optimize costs and stocks.

In the Potted plant sector process innovations and stock minimization dominates product innovation, although varieties of flowers are abundant; This suits a routinized network (figure 1, right side). Next, the ambition of Flor-i-Log is to orchestrate an expanding network by spreading out current sourcing and trading activities over Europe. However, the outsider observes something different; so far progress in Flor-i-Log signals an urgent and ongoing need to activate and motivate firms in the network. That does not characterize network orchestration, but, to the contrary, a group of firms that perceive they have to cope with a network, are subject to it (figure 1, top-right area). Indeed, discussions are sensitive on the allocation of costs and benefits; what is shared and what is individually realized?

Access to resources: extensive – narrow resource base

Business network literature focuses on the strategic resource content. Managerial and entrepreneurial resources drive growth and diversification. Such resources might include specialized production facilities, trade secrets, and engineering experience. They also include firm specific, idiosyncratic knowledge assets. These firm specific factors are traditionally considered as the major drivers of strategic change according to the resource based view. The clustering of firms in networks may be promoted by through sharing trade secrets and drawing on local pools of experience and skilled labour. Organizational diversity and network characteristics are likely to be closely influenced by how firms accesses resources. Large and diverse organizations have, by definition, control over a wider resource base and have the option to internalize them using a hierarchical

structure. Similarly a small company, which has a shortage of resources, has to access resources via the market (Toms & Filatotchev, 2004).

The resource base is emphasized in the following typology, distinguishing between lower and higher product complexity on the one hand, with supply networks of innovative/unique products versus functional products as a second differentiator (see figure 2) (Lamming et al., 2000). An extreme product of both high complexity and uniqueness is the Twinscan by ASML, a high-tech lithographic machine for the production of ICs, costing 20 million per system. In this field of the matrix, speed and quality supremacy are critical. The same is true for unique or innovative products that are less complex. Here, the information exchange is lower for it may be to the advantage of competitors. In networks with complex but functional products, like most cars, we see that sustainable quality and costs are critical in competition. In the last category we have standardized produce like soft drinks or DVD-recorders, where economies of scale are critical. As products are re-invented or become mature over time they may change form one box to another box. The network must orient itself to the related competitive priority and sharing of resources.

FIGURE 2

Supply network typology. Source: Lamming et al. (2000).

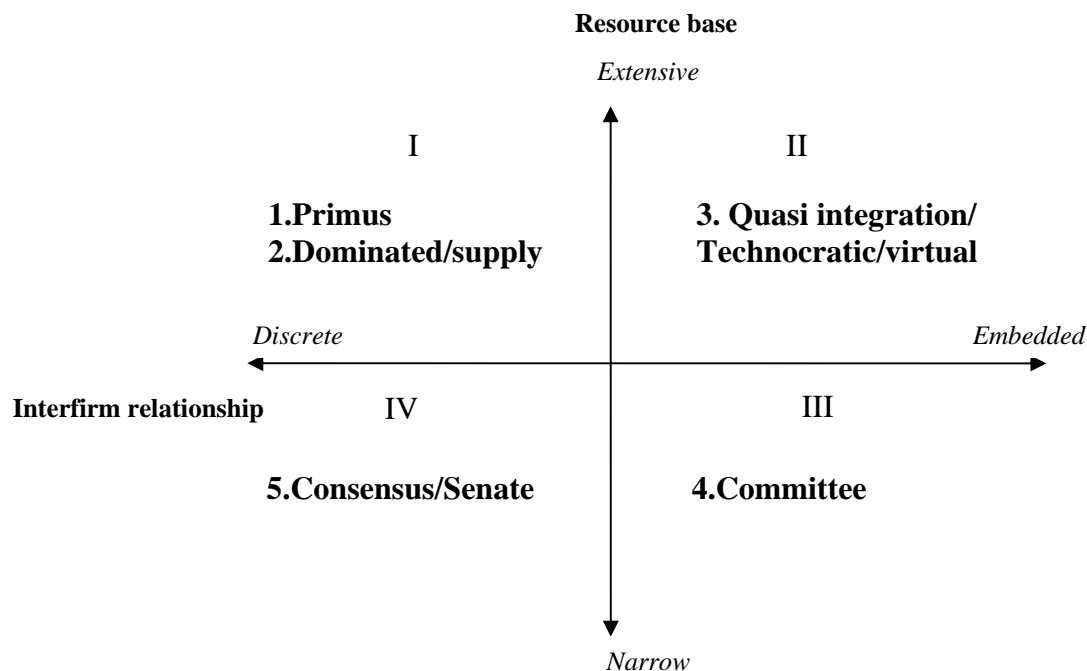
Characteristics	Supply networks of innovative and unique products	Supply networks of functional products
Higher complexity	<p><i>Competitive priority:</i> speed and flexibility, innovation, quality supremacy</p> <p><i>Sharing of resources and information:</i> large amounts of non-strategic information enabled by IT – problematic when involving sensitive information and knowledge</p> <p><i>Not included in survey</i></p>	<p><i>Competitive priority:</i> cost reduction, quality sustainability, service</p> <p><i>Sharing of resources and information:</i> large amounts of non-strategic information enabled by IT – generally unproblematic: may include cost breakdowns and strategic knowledge</p> <p><i>Example from survey:</i> off-road car</p>
Lower complexity	<p><i>Competitive priority:</i> speed and flexibility, innovation, quality supremacy</p> <p><i>Sharing of resources and information:</i> problematic exchange of sensitive information and knowledge – IT less critical</p> <p><i>Examples from survey:</i> drugs, LED semi-conductor, communications technology</p>	<p><i>Competitive priority:</i> cost (by high volume production), service</p> <p><i>Sharing of resources and information:</i> generally unproblematic – may include cost and strategic knowledge – IT less critical</p> <p><i>Examples from survey:</i> canned soft drinks, beer cans, wheel cylinders, window wipers</p>

At product level, and in comparison to other industries, Flor-i-Log may be characterized as a supply network of functional products with a at most moderate degree of product complexity. The product complexity in the Potted Plants sector relates to product quality sustainability, and the realisation of distribution channel-specific assortments. This suits a competitive priority on cost by high volume production and services.

TYOLOGY OF NETWORKS

Combining the two bodies of knowledge will result in a theoretical framework in which two dimensions of networks' organization will be related as two axes to present different types of networks. The resulting quadrants define four types of network organization which locus will be reflected in the quadrant names. The proposed dimensions, in combination with various networks typologies add up to the following five network types.

FIGURE 3
Network typology



Type 1: Primus network. The availability of extensive resources with firms within a network provides the possibility to hierarchally access these resources (Albers, 2007). On the basis of rough agreements between seniors on all involved firms, one firm is given substantial autonomy in planning on behalf of all partners involved. The emphasized common vision and aims create trust, shared interests, and joint investments, and self-enforcing safeguards. The shared aim is growth. As a result this requires only a few performance indicators, plus simple incentives and synergy allocation rules. With a high degree of direct supervision, informal communication, and only minor delegation by the seniors, this configuration suits best networking by a small number of ambitious SMEs.

An example relates to Air Berlin, who was given substantial freedom by Air Lauda to plan both the flight networks for both of them. No detailed contract was drafted. Later Air Berlin took a 25% share in Lauda and they invested jointly. The loss in autonomy was compensated by the expectation of a boost in turnover (Albers, 2005).

Type 2: Dominated/ supply network. A second possibility for this combination of the extensive resource base and discrete position of firms, pending the partners selected in this network, is the type of dominated or supply networks. Partners from successive stages of a supply chain may aim at improving chain effectiveness, by concentrating on complementing the core competences-driven activities of partners along the value chain. Although supply chain links may need to be intensive, communication innovations and cheap transport makes vertical integration of geographically dispersed firms redundant. It has the advantage of enabling (re-)contracting firms that are segments specialists, enabling the orchestrator to realize its ambitions quickly with relatively low (relation-specific) capital needs. Typically, the network splits up between cost oriented jobbers, value added providers, 1st tier partners, and a core firm, or orchestrator. A means to put the interest of the core firm central is to use of the head-and-tail format of developing and marketing the end product, optimally outsourcing or partnering for everything else, appropriating most of the value added as it has a central position bridging structural holes. Critical item in the vertical supply chain is the dependency-balance between network partners, all trying to gain and exploit unique competitive advantages. The resulting performance contrast between the supply chains of GM and Toyota is informative, as the first one stands for an zero-sum approach where short-term appropriation is focused upon, while the latter emphasizes more the positive-sum of a growth orientation. An alternative for a dominated supply chain is industrial district or cluster, where more or less equal, socially controlled partners leverage their specialist resource base and capabilities.

There are many examples of this configuration, like Microsoft, Ikea, Toyota, and Nike (de Wit & Meyer, 2004, 552). Networks may vary regarding (de-)centralization of decision-making authority, be it horizontally between actors/firms and/or vertically delegation to certain layers in the organization. When the network focus is on a single stage of the supply chain we may refer to chain stores or franchisers, like many (smaller) retailers (Lorenzoni & Baden-Fuller, in: De Wit & Meyer, p.557).

Type 3: Virtual company, quasi-integration or technocratic network. This type of network which is characterized by extensive availability of resources and embeddedness has a broad scope. Under the leadership of a core group of early, often large experienced firms, mutual adjustment dominates the alliance governors board. Operationally, the size and position of the joint unit drives standardization and formalization with an elaborate monitoring system and complex synergy assessment and distribution rules. The firms will integrate or harmonize their systems to exploit the potential benefits, of this network that aims at efficiency (De Man, 2004) and growth (Albers, 2007) Alliance specialists and dedicated staff execute vertically decentralized, operational tasks. Strong competition, constraining regulation, or the need for internationalization may result from this configuration. in a rather stable industry. Firms are bound to stay in the group as a result of the network specific investments.

Clear examples are the airline alliance networks, like Star Alliance, and shipping alliance networks, like the Grand Alliance, or networked cooperative banks. In the airline alliances, dedicated alliance managers run the elaborate joint business unit that coordinates the dispersed activities of the partners. The efficiency increase relates route planning, code sharing, and capacity management. A detailed monitoring system and extensive standardized and formalized practices result in furthering the integration of the firms in the network. The original partners still dominate the developing network.

Type 4: Committee network. The scope of this network is broad in principle, with growth aims and general intentions at the level of senior managers from the participating firms. At the network level this broad scope is effectuated because of innovative initiatives of workers at a decentralized level. The initiatives are organized via focused groups. In this manner a rather low degree of resources with individual firms is combined into new initiatives. A committee of alliance managers take the supportive nourishing and monitoring of the various projects. The committee does not detail any precise decision-making system nor revenue allocation rules. The embeddedness of firms stimulates a common culture, evidently mutual adjustment, low mutual uncertainty, and autonomy are standard practice. The result may be a myriad of collaborations, dependent on interest amongst firms and their employees to collaborate.

An example in case may be an Australian network of 24 computer service firms. They have very flexible relationships with the initiating partner as project leader. The absence of a governing system makes that the emphasis of the networks is on the set of subgroups (Miles & Snow, 1995).

Type 5: Consensus or Senate network. Partners, as in parliaments, delegate operational activities to a contracted, specialized company. The prime aim of partners is efficiency enhancement in a relatively stable and simple environment. As a restricted activity becomes a delegated matter for the partners, who are de facto competitors, no specialists are appointed, and the heads of the involved functional area, evaluate progress regularly. The heads are member of the alliance board, which has to deal only with a narrow scope. The firms know that the potential cost reductions are by definition restricted, which makes them inclined to distrust, decide by time-consuming consensus, fine-tune contracts, reject shared systems, and may employ third parties to enforce agreements. The size of the network will remain limited as mutual adjustment becomes an hindrance in larger networks.

An example is the joint transport purchasing alliance by a group of consumer product producers, like Beiersdorf, Colgate Palmolive and SaraLee, to bundle their part truck shipments to retailers. Logistic operations are delegated to a Logistic Service Provider (Albers, 2007).

The information sharing within Flor-i-Log turns out to be more limited than may be expected in networks with structurally embedded firms. Regarding such interfirm relationships the outsider in the PP-sector observes discrete firms who perceive each other firms primarily as competitors in appropriating a share of the value added. The project tends to realize limited collaboration on the resource bases, primarily on logistics. We conclude that Flor-I-Log suits the consensus-type of network (figure 3, lower-left area). In a consensus-requiring network the focus is on efficiency enhancement, i.e. cost reductions in a relatively simple setting. Such a collaboration will have a narrow scope, e.g. joint transport purchasing. We derive, that future collaboration is best based on a limited scope with focused value-for-money activities for individual (local) firms.

NETWORK GOVERNANCE

Dependent on the need for more radical change vs sharing (tacit) knowledge and system coherence, firms in networks may rely more on weak ties, respectively, on strong ties, and related forms of governance (Granovetter, 1973; Granovetter, 1983). Firms have strong ties when they have enduring, intensive interactions. Firms have weak ties when they differ strongly, have no overlap in activities, and lack shared experiences. When innovation has to be executed by different partners

who remain in tune than strong ties are most useful. Alternatively, when creativity, non-redundancy between partners, and novel combinations are key, even at the cost of mutual understanding, than weak ties will be more rewarding. The preferred forms of governance are related to the preferred ties, for strong ties come with integration, with full acquisition as the strongest form, while weak ties come with disintegrated forms of governance, such as non-equity alliances (Nooteboom, 1999, 52-3). Some reasons for preferring stronger ties and further integration, binding, are:

- Continuity to recoup specific investments
- Cognitive proximity to stimulate streamlined communication
- To realise incremental, but systemwide innovations
- To prevent opportunism, and knowledge spill-overs to competitors

Arguments for preferring weak ties and looser forms of integration, are as follows:

- Incentives for enhancing quality, efficiency and innovation, for survival
- Flexibility in coupling modules in different market-suitable configurations
- Diversity of experience and information yielding exploration new opportunities.

Governance of inter-organizational relationships is directed by relational competencies, which are typically not subject to property rights, i.e. tradable legal ownership. In very general terms, companies may be said to be made up of assets (e.g. buildings) positional advantages, and competencies (Nooteboom, 1999, 8-9). Assets are the resources of the firm. The positional advantages refer to efficient access to resources of other organizations, i.e. access to distribution channels, political acceptance, brand loyalty, and reputation. Positional advantages may result from deployed relational personal competencies, directed by organizational competencies, i.e. institutions. Next, institutions comprise of practices, procedures, rules, standards, norms of conduct, goals, roles models and rituals. Relational competencies determine the selection of the mode of governance, firm internally and between firms. The appropriate mix of instruments depends on the relevant goals and conditions. There are four generic classes of governance (Nooteboom, 1999, 8-9, 82):

- Control: legal, bureaucratic, directive
- Value: motivation on the basis of self-interest, partner-value
- Binding: exit barriers, 'hostages', reputation
- Loyalty: trust-based motivation, clan, values/norms, family, friendship.

The instruments of governance related to these four classes have been listed. Value may be steered by the following instruments:

1. Invest in partner's resources, to improve the relationship
2. Lower the partner's value by devaluating his resources or shifting (contracted) volumes to other partners
3. Invest in own relative value for partner, to make him more dependent, enhancing his loyalty
4. Lower one's own value by non-investing
5. Appropriate the resources of (or similar to) a partner lowering the value of the relationship
6. Actively collaborate to gain knowledge spill-overs

Binding may be influenced by changing switching costs between partners:

7. Stop relation-specific investments, lowering own switching costs
8. Change the switching costs of partners vs your own, by demanding more guarantees for continuation of the relationship, claim refunds for your own specific investments, or sell part of your share in specific investments

9. The reverse case of offering more guarantees, or accepting higher share in specific investments.
 10. Increase switching costs of partner by demanding a so-called hostage, i.e. things that are valuable only to the 'giver', here the partner
 11. Increase your own switching costs by offering a hostage, i.e. things that are valuable only to you
 12. Lower switching costs by investing in more flexible technologies or by developing common standards for contracts, techniques, products, etc.
 13. Enhance switching costs by investing in reputation of trustworthiness
- Opportunism may be influenced via changing the room for or intent towards opportunism:
14. Restrict freedom by tighter legal or other formal control, or increase monitoring, with related sanctions
 15. The reverse case is by accepting constraints on one's own freedom
 16. One increases one's freedom by reducing constraints or shielding off monitoring
 17. One signals heightened risks of opportunism by showing antipathy, lack of interest, or lowering norms
- Loyalty may be influenced by more non-business instruments
18. Bonding: invest in relationship, by joint social activities, friendships
 19. Emphasize institutional ties, by becoming family-member of partner, accept consequences of social order and clans, stress norms of conduct
 20. Invest in reputation of trustworthiness which enhances loyalty of partners
 21. Shift from formal to social control

Next to choosing for binding (stronger ties) or more loosening (weaker ties) of partnerships and networks, some instruments indicate a more cooperative vs a more negative, hostile, or opportunistic way or interaction. Thereby one ends up in 4 categories, on preferred instrument of governance vis-a-vis partners (see table 2). The numbers relate to the above stated list of instruments.

TABLE 2

Governance strategies and instruments Source: Based on Nooteboom 1999, pp.129-131.

	Binding	Loosening
Hostile, opportunistic	Tie down 6, 8, 10, 14	Pass on 2, 5, 16, 17
Cooperative	Attract 1, 3, 9, 11, 13, 15, 18, 19, 20	Set free 4, 7, 12, 21

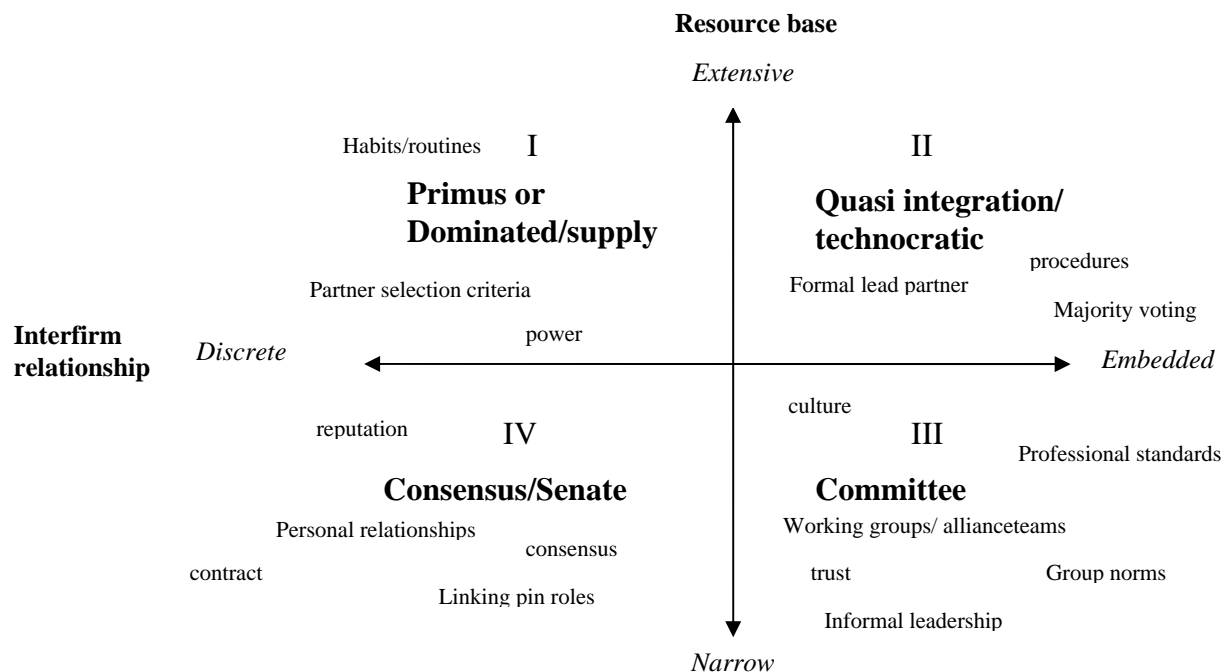
Table 2 clarifies for instruments with what approach it suits and how it impacts degrees of freedom, ties. We detail some instruments for the boxes, the numbers correspond with the listings above. In the box stated 'Tie down' one binds partners aggressively by increased monitoring, asking for hostages, or more guarantees and reducing his room for conduct. By 'Attract' one binds others by increasing mutual value, reinforcing bonds, and limiting one's room for opportunism. In the box of 'Pass on' the firm increases its own freedom at the cost of others, develop alternative relations,

claims extra guarantees, and compensations, etc. In the box ‘Set free’ one facilitates switching for all, and open up options for all. Although the box attraction has become more detailed in research, it does not signal which behaviour is more often recognized nor recommended.

Networks may both facilitate access to information, resources and opportunities, and it may help to overcome dilemmas of interfirm cooperation and task coordination (Garliulo & Benassi, 2000). We now turn to the issue not of network coordination but of task coordination. As with all network issues also on the coordination mechanisms there are many alternatives firms can choose from, so we have to simplify by listing them along specific dimensions. Network governance has to balancing arguments and forces for integration with arguments and forces for differentiation. Although a networks consist of autonomous partners who willingly cooperate, there is always the possibility of a misfit in planning and control. As a consequence, contracts will always be incomplete (planning) and cheating, opportunism or abuse of position is often possible (control). As a consequence, ongoing coordination systems in a network will rely on a mixture of coordination mechanisms (Miles & Snow, 1995). Figure 4 lists some of them.

FIGURE 4

Coordination mechanisms in networks



Next to planning and control issues in network governance, firms must be aware that poorly imposed laws and rules may hinder the progress of a network. First, poor enforcement makes legal governance expensive or even infeasible. Furthermore, when the governance is rather legalistic, enforcement costs may become excessive. Finally, entry barriers will be high in the contrary case of a relational or personal attitude, with a predominance of family, clan, or religious moral order (Nooteboom, 1999, 79).

The Dutch open marketplace and trading system in horticulture is unique in facilitating a system that combines steering mechanisms that are either value-oriented (e.g. motivation by self-interest), stakeholder binding (e.g. 100% of deals via auction, or out), or relate to loyalty (values/norms, family). Flor-i-Log, expanding across Europe, cannot expect local firms to be attracted by loyalty-based steering-mechanisms, such as social control. The same goes for trading and transportation firms who have their stakes, history and running businesses. In line with preceding sections one may argue that all need incentives, to bridge the gap towards local-for-local trade outside Holland. In conformity to preceding sections, firms should 'tie down' relationships, which acknowledges the prevalence of an opportunistic approach, and the need to make binding contracts (see figure 9). Complementary, also the governance strategy to 'attract' firms may be advised in order to stress a value-for-money orientation.

MANAGEMENT OF CHANGE. HOW TO GET THERE?

Although many authors on business networks has considered networks as given contexts, here cooperation and the related network structure is the object of deliberate design (Lorenzoni, & Lipparini, 1999, in: Moller & Svahn, 2006, p.986). Dependent on the type of a major industry events, one can expect different firms to mobilize resources, orchestrate the transition towards specific business networks.

Network determination and value systems.

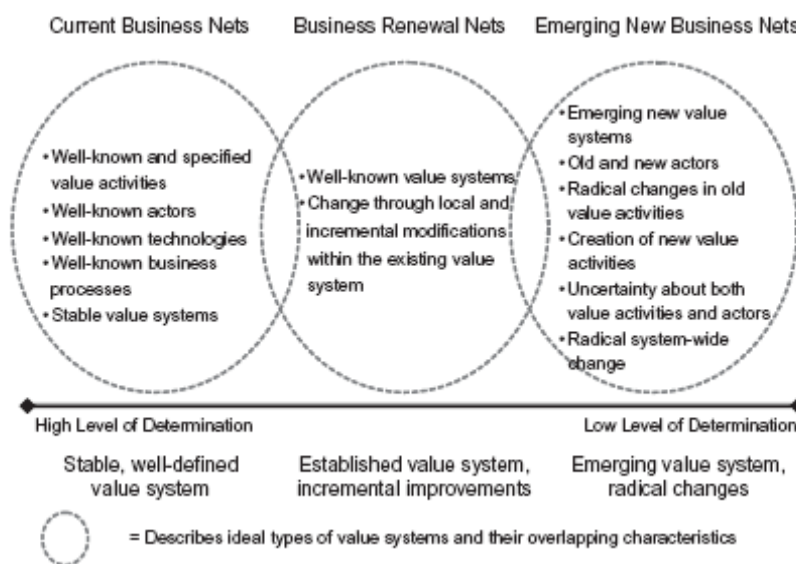
On the dimension of level of external determination, we find three ideal types of alternative networked value systems. The network has a high level of determination when the value-creating activities and related resources are well-known (Moller & Svahn, 2006), and the useful knowledge can be codified, and optimally exploited (See figure 5). Networks that show high levels of determination may be called running or current business networks. They are stable value systems, that best suit defender strategies (Miles & Snow, 1992). In day-to-day contacts, issues of coordination prevail over issues of cooperation. We may derive that the so-called 'current business networks' are similar to the supply dominated /supply network configuration, discussed earlier. The current business networks have multi-tiered actors and clearly defined activities and resources. Regarding coordination of activities, think of lean manufacturing and assembly on demand. Especially modular or decomposable end products may be expected here, with highly specialized partners, requiring codified knowledge and transparent formats. An example is Dell's elaborate network. The orchestrator must willingly accept mutual dependencies. Furthermore, they should combine elements of strong cooperation with delegated self-organization to stimulate variety and specialization. In a current business network the network orchestrator typically has a strong purchasing position or sales position to bind self-interested firms to participate in his network and share knowledge.

The contrary position to current business networks is emerging business network, entailing low levels of (external) determination; radical changes in value creation activities comes with uncertainty about the necessary activities and suitable network partners. One may call them emerging or new business networks, for whole new value systems and related networks are created.

For example, in the 1990s old actors from telecom and electronics had to transform rapidly and link up to newly emerging networks and value chains with its new firms in computers, mobiles, networks, software, new media, etc. Cooperation and corporate diplomacy prevailed over coordination issues. Nowadays new business networks emerge in, e.g., biofuels. No longer is the optimized exploitation of explicit knowledge critical, but the imagination and exploration of new business opportunities, which is typical for a prospector strategy (Miles & Snow, 1992). Problematic for (accelerating) progress of these networks is that ideas are often fuzzy, tacit and dispersed. Furthermore, specialization of actors makes it difficult to develop a systemic perspective encompassing the different evolving technologies

FIGURE 5

Value system continuum of value systems and corresponding network types
Source: Moller & Svahn, 2006



and value activities. As a result, the value to the knowledge is very uncertain, while the potential value activities are ambiguous. When it comes to the (former) orchestrator, he must be able to balance strong and weak ties in the network, i.e. established and unorthodox relationships. He may expose himself to and explore new views, and technologies, but to benefit from it he must have absorptive capacity ((Moller & Svahn, 2006), and be able to transform itself. Moreover, to be able to develop a new business network, the orchestrator must set the agenda, have attractive resources or knowledge, and create an meeting forum to deal with cooperation issues, and create an network identity. This happened when Nokia provided open access to part of its mobile's source code in order to propagate the creation of and stimulate interoperability for 3G mobile services.

In between the extreme types of current business network and emerging new business network, we find the third archetype business renewal network, which prioritizes effectiveness. When networks prioritize effectiveness, taking a balanced position between exploration and exploitation, between new and established value activities, than product modifications or efficiency

enhancing practices may lead to new opportunities (Moller & Svahn, 2006). Due to specialization one has to cooperate strongly as resources and capabilities necessary for renewal are dispersed among various partners. Business renewal networks suits also when a running network requires temporary upheaval to adjust systematically its activities to suit, e.g., a new ICT-platform. Here the critical capability is the bridging of structural holes, connecting different groups or different existing networks. To link different communities or networks one must develop or have the ability to cross professional, sectoral, or geographical sub-cultures. Renewal comes with collaborative learning, explicit goals and timetables. Problematic for collaborative learning are cultural distance, and organizational differences. The externalization of knowledge, i.e. from tacit to explicit, in a peer-to-peer setting may help to overcome such barriers (Nonaka & Takeuchi 1995, in Moller & Svahn, 2006, 995-6). The renewal network will benefit from previous partner relationships, alliance experience, relational governance structures, and the sharing of resulting benefits. The orchestrator should balance space, time and resources for exploration with exploitation, i.e. not losing turnover and efficiency.

The impact of major events on network structures.

The initiator and propagator of network changes is expected to be different with structure reinforcing events vs structure-loosening events (Madhavan et al., 1998, 439). A structure reinforcing event may further centralize a network, consolidating the various network positions. An orchestrator, i.e. the more autonomous focal firm, holding a central, bridging position before an industry event, is expected to propagate the adaption to a structure reinforcing event, in order to consolidate its position (Gnyawali & Madhavan, 2001, 435). The consolidation of the steel industry in the 1980s was such a case (Koka et al., 2006, 727).

With structure-loosening events it is more probably that orchestrators are reactive instead of taking the initiative, because they are tailored to fit not the new but the former market constellation (Gnyawali & Madhavan, 2001). Structure-loosening events are to the advantage of some of the less central firms or new entrants. At least temporarily, the network will be less centralized to adapt to the developments. The new market leader becomes successful because it is focused on the new setting following the market event. However, it is difficult to predict in an early stage which firm becomes the new orchestrator. Structure-loosening events come with increases in uncertainty. Older firms including the orchestrator will have to scrap investments, reposition the firm, invest in new technologies, and develop new relationships, knowledge, and routines. Present orchestrators and other central firms will become less attractive partners, unless they have the motivation, ability and resources to pick and nurture the new winners (Madhavan et al., 1998, 455). In the subcase that also resources are increasing or abundant, existing firms may try to ally with a substantial set of new possibilities. New ties will be created, and many so-called 'network options' may be taken. The network will increase in size and range of ties (Koka et al. 2006, 730). Here, one may think of Cisco acting as venture capitalist to firms working on new technologies. In various industries, however, uncertainty comes with reduced resources. The lack of sufficient resources deepens dependency on critical resources, and for those unable to replace outdated ties by ties with winning partners will end up out of competition. An example, is the radical change in the Swiss watchmaking industry, due to the introduction of flexible production technologies and marketing practices, which brought about the new orchestrator Swatch (Jacobides & Winter, 2005).

Day-to-day-coordination or network orchestration may incrementally impact developmental paths of firms, but here we emphasize the disruption of coordinated activities, i.e. the realization of discontinuous changes, by the cooperative mobilization of resources following industry events. Think of industry events as widely recognized shocks, such as regulatory reform, radical technological innovation, or drastic changes in consumer preferences. Actors with a comparable history, activity, product and level of investment may, following an industry event, realize wholly different competitive advantages (Lundgren, 1992, in: Axelsson & Easton, 1992, p.157). Creating new or changing existing networks changes the interfirm relationships, and thus the positions of individual firms, the balance of powers in networks, and thus the performance of the firms involved.

Mobilisation of actors and resources.

When discussing major external industry events one must distinguish between Network integrative mobilisation and Network changing mobilisation. Mobilisation is ‘the process of forming crowds, groups and associations and organizations for the pursuit of collective goals.’ (Lundgren, 1992, in: Axelsson & Easton, 1992, p.159) Network integrative mobilisation relates to expanding the network of existing activities, similar to business renewal networks. For example, one may go international by opening an foreign sales office of a joint facility abroad. It is a market investment, when such mobilization of extra resource is done by partners from a current business network. When the group is convinced on the need to act there will be little problem to mobilize the required resources. The partners will focus on the allocation of the extra capacity, less on the investment costs itself. Network integrative mobilisation suits change processes were most of the skills, routines and practices currently in use have to be preserved.

Network changing mobilisation relates to combining previously unrelated (different or similar) activities (Lundgren, 1992, in: Axelsson & Easton, 1992, p.159-161), that may result in the emergence of new business networks. When the degree of perceived change is rather low, the leading firms will have to face resistance from within the existing network, and outsiders may be first to mobilize resources, introduce new technologies, and openly compete for existing market positions. Compared to the preceding case they should anticipate to mobilize a larger share of the required resources internally. An initiator may need to re-orient towards less centrally positioned partners, to mobilize sufficient backing and resources, and realize changes. To conclude, unless timely redirection of resources is realized by the current orchestrator, it is probable that with major structure-loosening events new business networks emerge, with a new orchestrator, successful in network changing mobilization.

Regarding the Potted Plant network, we observe that the enlargement of the EU and various market developments (in production, changing market shares, shifts between country-customer segments) are structure loosening events. Such events increase uncertainty, and weaken power positions, what is to the advantage of ambitious decentralized firms and new entrants. In Europe relative outsiders, e.g. from Italy, have taken the initiative to explore new chain-related opportunities. They go for network changing mobilisation of resources and actors, combining previously unrelated activities. In the Netherlands, however, we see mergers between equals (auctions, traders, transporters) which is typically suited for the contrary case of structure reinforcing events, such as consolidation in the retail-segment. Such events may be in the interest of key players, in the center of networks. Flor-i-Log wants to roll out the Dutch open-marketplace model, but it does not seem to be looking for a new value system, i.e. a radical change of system.

Flor-I-Log partners seem to prefer to expand some of the known services to new countries: The value chains are known, and one is looking for adjustments, expanding the existing system. This network integrative mobilization expands the Dutch marketplace network to encompass foreign firms. To realize this as a group will probably demand maximum efforts of the current consensus-type of network without an orchestrator. Only with a strong eagerness to change at group-level will this result in the preferred renewal of the business network.

CONCLUSIONS

We started this paper by detailing the two perspectives of interfirm relationships and access to resources. By combining two dimensions, coming from two radically different perspectives, we made clear that organizing for competitive advantage benefits from relating the level of firm embeddedness to access to resources and to what ends. Indeed, the structuration suggests that competitive advantage is both a matter of relationships and access to resources. The resulting variation in types of networks can account for the different responses to competition. The elements are interfirm relationships, resource bases, network governance instruments, coordination mechanisms, network determination, and resource mobilisation. Thereby, the paper is able to detail 5 generic types of business networks. The paper identifies the basis elements and it facilitates both comparison among empirical examples of companies' competitiveness, and the network design by firms. The paper may become of added value to both network literature and business practices by detailing, both conceptually and by illustrations, the structuring of business networks.

REFERENCES

- Albers, S. 2005. *The Design of Alliance Governance Systems*, Germany: Cologne. PhD.
- Albers, S. 2007. *Configurations of Alliance Governance Systems*, Paper presented at the AOM-annual conference 2007.
- Anderson, J., Hakansson, H., & Johanson, J. 1994. Dyadic business relationships' within a business network context. *Journal of Marketing*, 58 (4), 1-15.
- Contractor, N.S., Wasserman, S., & Faust, K. 2006. Testing Multitheoretical, Multilevel Hypotheses about organizational networks: An Analytical Framework and Empirical Example. *Academy of Management Review*, 31 (3), 691-703.
- Croom, S., Romano, P. & Giannakis, M. 2000. Supply chain management: an analytical framework for critical literature review, *European Journal of Purchasing & Supply Management*, 6, 67-83.
- Gargiulo, M., & Benassi, M.. 2000. [Trapped in your own net? Network cohesion structural holes, and the adaptation of social capital](#). *Organization Science*, 11 (2), 183-196
- Ghisi F.A. & Martinelli, D.P. 2006. [Systemic view of interorganisational relationships: An analysis of business networks](#). *Systemic Practice and Action Research*, 19 (5), 461-473.
- Granovetter, M.S. 1973. The Strength of Weak Ties. *The American Journal of Sociology*, 78, 1360-1380.
- Granovetter, M.S. 1983. The strength of weak ties: a network theory revisited. *Sociological Theory*, 1, 201-233.

- Granovetter, M.S. 1985. Economic Action and Social Structure: the problem of embeddedness. *The American Journal of Sociology*, 91 (3), 481-510
- Grant, R. 1991. The Resource-based theory of competitive advantage: implications for strategy formulation. *Harvard Business Review*.
- Harland, C.M., & Knight, L.A.. 2001. Supply Network Strategy: Role and Competence management. *International Journal of operations and Production Management*. 21 (4), 476-489.
- Harland, C.M., Lamming, R.C., Zheng, J., & Johnsen, T.E. 2001. A Taxonomy of Supply Networks. *Journal of Supply Chain Management*, 21-27
- Hagedoorn, J. 2006. [Understanding the cross-level embeddedness of interfirm partnership formation](#). *Academy of Management Review*, 31 (3), 670-680
- Hanf, J. & Dautzenberg, K.. 2006. A Theoretical Framework of Chain Management. *Journal on Chain and Network Sciences*, 6 (2), 79-94.
- Hakansson H. & Snehota, I. (Eds.) 1995. *Developing relationships in Business Networks*. Boston: International Thomson Press
- Hinloopen, J. & Marrewijk, Ch van. 1999. Exports by the Netherlands: flowers and vegetables [Nederlandse export: bloemen en groenten]. *Economisch Statistische Berichten*, 4197, 255-257.
- Jacobs, D., Boekholt, P. & Zegveld, W. 1990. *The economic power of the Netherlands [De economische kracht van Nederland]*. Den Haag: SMO.
- Jones, C., Hesterly, W.S., & Borgatti, P. 1997. A General Theory of Network Governance: Exchange Conditions and Social mechanisms. *The Academy of Management Review*, 22(4), 911-945.
- Lamming, R.C., Johnsen, T.E., Zheng, J. & Harland, C.M. 2000, An Initial Classification of Supply Networks. *International Journal of Production and Operations Management*, 20 (6) 675-691.
- Man, A.P. de. 2004. *The network economy: strategy, structure and management*. Aldershot (UK): Edward Elgar Publishing,
- McGee, J. & Thomas, H. 1986. Strategic groups: theory, research & taxonomy. *Strategic Management Journal*, 7 (2) 141-160.
- Meyer, R. 2007. *Mapping the Mind of the Strategist. A Quantative methodology for measuring the strategic beliefs of executives*, Rotterdam: ERIM. PhD
- Miles, R. & Snow, C. 1986. *Network Organizations: New Concepts for New Forms*. California Management Review.
- Miles, R. & Snow, C. 1995. The new network firm. *Organization Dynamics*, 23 (4) 5-18
- C.Dhanaraj, C. & Parkhe, A 2006. Orchestrating innovation networks. *Academy of Management Review*, 31 (3), 659-669.
- Möller, K. & Svahn, S. 2003. Managing Strategic Nets: A Capability perspective. *Marketing Theory*. 3 (2), 201-226.
- Nooteboom, B.1999. *Inter-firm alliances; Analysis and design*, London: Routledge.
- Porter M.E. 1980. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*, Free Press, New York.
- Porter, M.E. 1998. *On Competition*. Harvard: Harvard Business School Press
- Ritter, T., Wilkinson, I.F., & Johnston, W.J. 2004. Managing in Complex networks. *Industrial Marketing Management*, 33, 175-183.

- Sacchetti S. & Sugden, R. 2003. [The governance of networks and economic power: The nature and impact of subcontracting relationships](#). *Journal of Economic Surveys*, 17 (5): 669-691.
- Snijders, H., Jacobs, D.& Vrolijk, H.2007. The economic power of agrifood in the Netherlands [De economische kracht van agrofood in Nederland], The Hague: SMO.
- Snow, C., Miles, R. & Coleman, H. 1992. Managing twenty-first century network Organizations. *Organizational Dynamics*, 5-20.
- Todeva E. 2006. *Business Networks: Strategy and Structure*. London: Routledge.
- Toms, S. & Filatotchev, I. 2004. Corporate Governance, Business Strategy and the Dynamics of Networks: A Theoretical model and Application to the British Cotton Industry, 1830-1980. *Organization Studies*, 25 (4), 629-651
- Uzzi, B. 1997. Social Structure and Competition in Interfirm Networks: The Paradox of Embeddedness. *Administrative Science Quarterly*, 42, 35-67.
- Wit, B.de & Meyer,R. 1998, 2004. *Strategy: context, content, & process*. Thomson publishers