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**INTEREST, SENSEMAKING AND ADAPTIVE PROCESSES
IN DEVELOPING BUSINESS NETWORKS
– AN AUSTRALIAN BIOFUEL CASE**

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Abstract

The roles of managers in business network development and change is scrutinized by examining the emergent process of developing a business venture from R&D relationships.

Both individual and corporate actors play parts in developing the network. A model is presented that links individual managers with network development. The interests and connections between individuals in the social sphere provide the emergent linkages for network development. Individuals undertake sensemaking, develop an understanding within the in-between, and enact adaptive activities with corporate resources to unfold the processes of network development. Each phase of development unfolds reactive and proactive adaptations, as outcomes of adaptive processes, that shape the business network.

A longitudinal case study of an emergent biofuel network comprises the empirical study of the paper. The research method is processual in nature, with events and activities studied through sequences of periods. Thus, change and adaptive processes are apparent and the network is adapted for the next phase of change.

The paper discusses future research and managerial implications.

Keywords: sensemaking, cues, in-between, events, process, interaction space, adaptation

Introduction

The question of how managers are involved in the processes of interaction and business network development is an area of on-going research. Researchers have suggested that understanding change and development of business networks requires inclusion of firms as actors (Håkansson and Snehota 1995), ‘schema’ and ‘idea logics’ (Welch and Wilkinson 2002), ‘commitment’ by actors (Lenney and Easton 2009), and there has even been a call for a more human perspective (Medlin and Törnroos 2007). Recently, ‘sensemaking’ (Weick 1995; Weick 1979) has been proposed as an important part of managing processes in networks (Colville and Pye 2010; Geersbro 2004; Henneberg et al. 2010; Möller 2010; Neill et al. 2007). Each of these suggestions implies a role for individuals and groups of managers in the activities of developing a business network.

Interaction between firms is the basis for how business networks are formed and developed. Interaction between firms results in adaptations (Halinen et al. 1999; Hallén et al. 1991) and these change the network (Håkansson and Snehota 1995). However, the ways individuals are implicated in these interaction processes is, according to Harrison, et al. (2010) not so well understood. Both proactive strategy and reaction to change are involved, but how managers and individuals interpret events and possible changes and so shape firm networks is less clear. This is especially the case for emergent technologies, where development is restricted by the path trajectory of earlier technologies (Håkansson and Waluszewski 2002). That is, the previous firm network effectively locks out development of new technologies. In these cases, the development of the emergent technology requires re-shaping the network. But how are individuals and managers involved in adaptive processes that initiate change and re-shape the network?

Our objective in this paper is to add to existing knowledge by conceptually scrutinizing networking processes according to the interests of individuals and groups of actors and their sensemaking and linking these to the adaptive processes that generate the business network. The paper explores how a specific business network comes into existence and develops, as interactive processes over time.

The starting point relates to the *interests* driving the emergent business process between actors. We focus on both the self-interests of acting managers and the specific business and corporate interests of the organizations they represent. In addition, we see that the mutual interests of the collaborating actors of the network are important in driving the business processes, and that all of these interests are embedded in more general societal and collective interests.

To connect these different interests of individuals and groups of managers to adaptation in the network requires an individual and socially bound mechanism. We see *sensemaking* as such a social mechanism. Sensemaking is a micro-mechanism based on how managers interpret cues and socially construct meaning to undertake action (Weick 1979). Sensemaking enables managers to enact and coordinate their collective response. The processes of sensemaking in relation to interaction and the outcome of adaptation have mainly been elaborated for a single organization operating in a competitive environment. In this paper we extend the literature by elaborating sensemaking in the context of a business network.

Adaptive processes are a key mechanism of network change. Hallén, Johanson and Seyed-Mohamed (1991) point out that adaptations are a central feature of business relationships, and that past adaptations form a framework for future change. Håkansson and Snehota (1995, 22) also see adaptation as a “prerequisite of the development and continued existence of a relationship.” Here we distinguish between adaptations and adaptive processes. Adaptations are outcomes, where change is apparent in a network change. Adaptive processes are on-going, as firms combine and coordinate resources to build value. Adaptations place the firm within the relational web of the network and give the firm identity and a set of activities.

Each of these three process concepts is developed in the paper to understand how adaptation is achieved, prior to conducting an empirical case study following a processual approach. We define process as a series of connected activities and events, where the connection is also conceptual through time (Van de Ven 1992). This definition notes the social construction of process, and that managers also construct a connecting framework of understanding.

The paper is organized in the following manner. First, the role of actor’s mutual and collective versus specific and self-interests in developing business networks are elaborated. Second, critical elements of the sensemaking approach are presented and analyzed. We present a model and description of sensemaking across a business relationship, where at least two firms are involved. Third, we elaborate the literature on adaptation, noting the distinction between proactive and reactive adaptations in a network context. Fourth, we undertake a longitudinal case study of a firm developing and changing network connections as intellectual property is moved towards commercialization in the algae biofuel industry. Finally, we comment briefly on future research and managerial implications.

Interests

Separating interests is a difficult task (Medlin 2006). Interests are based on the connections between actors, and refer to where the “right”, or “share” or “claim” of an individual or a collection of actors exists relative to other actors. However, apart from legal ownership and the property rights, which ownership confers, most business activities rely on responsibilities and interests in social and business settings where the means of action are collectively re-generated on a continual basis. Further, most business activity relies on resources within other firms (Håkansson and Snehota 1989). This means that interests are also combined, as each firm has an interest in the resources of the other and so develops relationships where interests combine. At issue in this discussion is the distinction between interest as legal “rights” and interest as a “share” or “claim” in the outcome of joined action. Also of note is that interests of the shared form are upheld by norms (Macneil 1981; Macneil 2000); while interests of the claimed form are necessarily perceptual and dependent on an understanding of history, experience and social norms, or are based on a legal right.

In business relationship research the question of interests is not so strongly researched, except indirectly through the issues around relational and contractual norms (Ivens and Blois 2004; Ordanini 2011; Tuusjärvi and Möller 2009). In Håkansson (1982), on the basis of empirical case studies, is noted that firms’ are interested in the resources of other firms. However, also noted is that firm interests in a business relationship are not always compatible. Further, that a lack of

interest results from a perception that the other firm has different interests or lacks the ability to perform.

However, the concept of mutual interest also appears in business relationship research in the form of joint problem solving processes (Håkansson 1982) and emergent collective action (Brito 2001; Lane and Maxfield 1996). Håkansson and Snehota (1995, 1997) note that “mutual orientations requires shared interest related to the activity and resource aspects of the relationship that are often complex.” While Lane and Maxfield (1996), taking a process perspective, propose the idea of mutual directedness. However, in a dynamic and on-going process separating out what is mutual becomes a difficult task (Medlin 2006). Yet economic activity falters without mutual or at least conjoined self-interest.

Turning to individual self-interest, of particular note in the Teximac case reported in Håkansson (1982) is the issue of how individual self-interest subordinates the firm’s interest in a business relationship. In that case a manager acted in the interests of the partner firm, to follow their own self-interest or the interests of the social relations rather than the long-term interest of their firm; at least according to the respondent.

Canning and Hammer-Lloyd (2002) note that adaptations will not occur unless each party can generate an interest by the other party. These authors find that the degree of interest in an adaptation is reliant on “the level of awareness or experience of the particular benefits” (p. 623). Canning and Hammer-Lloyd (1992) find that managerial personal self-interest is important in motivating successful adaptation and note that this reflects models of business marketing behavior (Frazier 1983; Håkansson 1982; Webster and Wind 1972). Canning and Hammer-Lloyd (1992) also note that managers are motivated by success in joint actions. However, these authors leave unsaid any comment about collective or mutual interests.

Medlin (2006) considers the issues of self and collective interest in business relationships, and suggests that the two are not diametrically opposed. In Medlin’s (2006) view, collective interest is conjoined sets of self-interest by the relationship partners, relative to other parties. Medlin (2006) also presents the results of a rare quantitative examination of a part of the Actors-Resources-Activity model (Håkansson and Johanson 1992; Håkansson and Snehota 1995). The results show that resource ties between firms lead to achievement of firm economic goal (beta = 0.41, t = 3.59); and achieving this goal leads to relationship performance (beta = 0.50, t = 4.59). In other words, a collectively motivated action of setting up resource ties leads to achieving a self-interest goal; and achieving a self-interest goal allows achieving a collective interest in the form of business relationship performance. There is one clear rider on these findings, namely that they are a result of not examining other collective interest constructs in the model (Medlin, 2006, 862). In addition, these results are concerning a firm in a business relationship, and so they do not take into account individual manager interests, nor do they distinguish between firm and network level or societal interests.

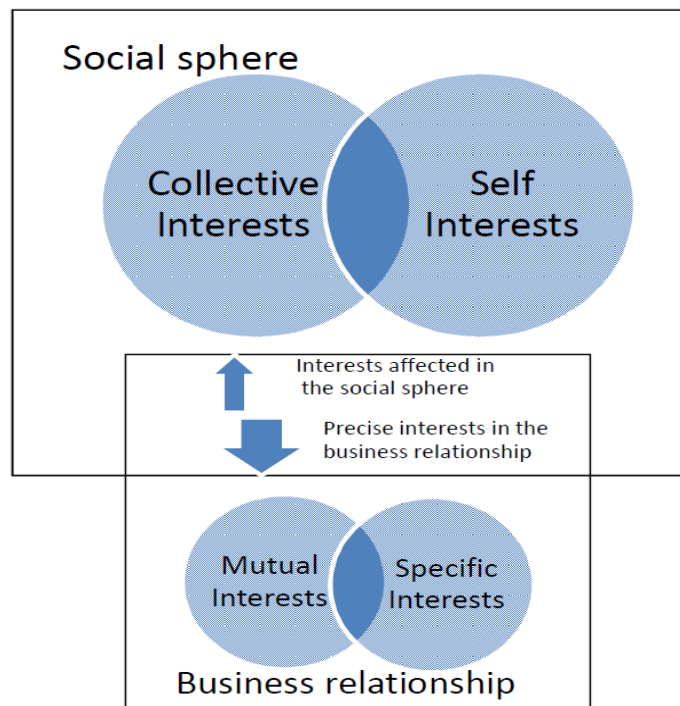
These discussions lead us to the position that separating individual manager self-interest, from firm self-interest and mutual interest in a business relationship, including the issue around what is social interest is not a simple task. The issues around perception of interests and changing interests in time, along with the complexity of the inter-firm interactions make understanding

actor interests difficult. However, individuals and managers do think, decide and act on the basis of perceptions and understandings of their environment; and considerations of self, collective and legal interests all affect this understanding.

To begin to resolve these distinctions we propose the model presented in figure one. Here we take the perspective of individual managers and distinguish between the social arena and business relationship arena. We also explicitly focus on the interests of the actors in the network as being collective and mutual, but also the actors have specific and individual interests existing in parallel.

The concepts of collective and self-interest in the social arena relate to individuals and groups in social settings in the network. These social setting can include family and community groups, and different forms of political activity. In the business relationship arena we include the concepts of mutual and specific interest. Mutual interest in this context is that related to the conjoined interests of the parties in the business relationship, relative to other parties. This equates to the language of Håkansson (1982), Håkansson and Snehota (1995) and Medlin’s 2006 concept of collective interest. Meanwhile, specific interests are firm level interests in the business relationship. Specific interest is the concept of Håkansson (1982), Håkansson and Snehota (1995), and Canning and Hammer-Lloyd (1992) and Medlin’s (2006) concept of firm self-interest.

Figure 1: Interests by Social and Business Relationship Spheres



Distinguishing between the social and business relationship arenas offers useful clarifications. First, the separation strengthens the analysis of reasons for network change, by noting that change can arise from interests in either the social arena or the business relationship. Adaptations

and eventually network change are shaped by social collective interests or social self-interest; or from the mutual and specific interests of the business relationship. Inclusion of the social arena as a source of network change reflects the literature on social capital and networks (Batt 2008). Second, change is understood in either direction, from the social to business relationship arena or the opposite, and many adaptations rely on elements from both arenas, as is indicated by the overlap of arenas (i.e. boxes).

Third, the overlap of interests within arenas points to the issue of how self-interest and specific interests are nested to form collective and mutual interests respectively. Here the collective and mutual interests rely for formation on other parties' self-interest and specific interests respectively, but also very importantly on the collective interest and mutual interest of the combined parties, which are likely beyond their individual self and specific interests and relative to other parties. Namely, the relationship has further additional mutual interests resulting from the relationship, and not from the firm's specific interest in the relationship.

Fourth, the overlap of interests also points to the areas where interests are in conflict and adaptations need to be made. Adaptation boils down to bridging conflicting or problematic issues that emerge as an outcome of interactive processes between actors of the network or as a consequence of events taking place from outside the network. In addition interacting parties need adaptation for developing needed skills and resource constellations for value-creation.

Fifth, the nature of mutual and collective interests of the network always clashes with personal self-interest and specific interests of the corporate actors interacting. In developing business relationships in the context of networks we think both individual manager and collective issues related to the concept of interest should be considered. Both humans and organizations are looking for benefits. In this case in the form of how the business is of interest for the individual, as well as how this can be done collectively and with mutual joint interests of relevant network partners.

Sixth, at the individual manager level we feel that the specific and self-interests form a topical interplay in the networking process concerning how relationships and the network come into existence and develop over time. Actors, as individuals and as firms, act and make sense of the events surrounding their business through their self-interest and the specific interest of the firm. The specific interest relates to how the individual actor can solve the objectives of the firm she/he represents in interaction with another person representing her/his company. In emerging network processes and new business formation the individual roles loom often large, especially in the start-up phases.

There is also the question about how to use common resources and how to gain something together that relates to the collective or mutual interests of the parties. We cannot escape from either form of these interests. They all exist as a part of the interactive process and form a starting point for interactive sensemaking between the actors.

Sensemaking

Sensemaking has been mainly used for intra-firm management and organizational development studies (Weick 1995; Weick 1979; Weick et al. 2005). We feel that the approach is also well suited for inter-organizational network development studies (cf Henneberg et al. 2010; Möller 2010). However, the inter-organizational mechanisms of sensemaking are not elaborated; especially concerning the differences of goals, perspectives and interests inherent in a business relationship.

The social and collective nature of sensemaking is particularly relevant for how managers develop complex understandings of their environment, and in this study we are interested in the many connections between firms, managers and their underlying interest. Sensemaking provides a means for better grasping the interactive networking process between business actors:

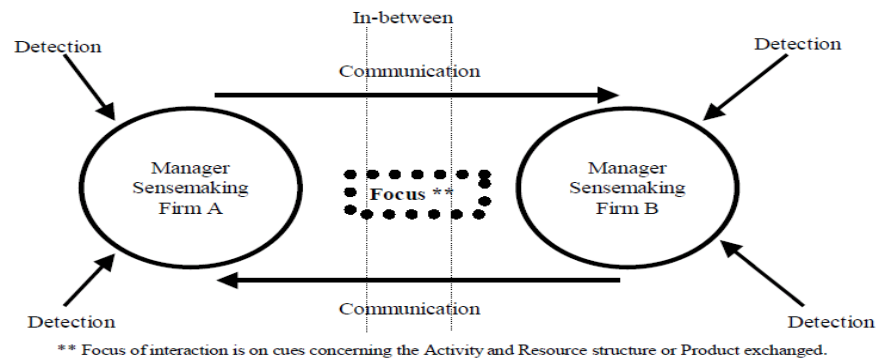
1. The concept of *sensegiving* relates to how specific actors act towards other parties in engaging them, giving information and showing willingness to co-operate and readiness for mutual investments and exchange of resources.
2. *Sensetaking* is how an actor experiences and reacts for being e.g. ready to internalize and communicate the sensegiving from other actors for mutual interest and investments.
3. Both sensetaking and -giving form the process between parties in order to create the basis for interactive *mutual sensemaking*. Mutual understanding provides the basis and justification for a considerable amount of managerial action, while private-interests may also be present in the background.

Here we extend the ideas and concepts of Weick (1979, 1995) into an interactive network setting between networking actors.

Within a business relationship each firm acts in their own specific interests and to some degree also in their mutual interests. The later interests are evident in the joined actions of managers in re-structuring the resource and activity layers to secure their firms positions within the network. This means interactive sensemaking always has two conjoined and future oriented purposes. This double set of perspectives by two interacting parties makes for a complex interaction space, which we term the '*in-between*'. The '*in-between*' is the concept of the 'interaction space' moving through time, it is the time-space region where sensemaking cues can be jointly detected. Adding the '*in-between*' notes the role of on-going and never ending sensemaking within an interactive relationship context. Importantly, the '*in-between*' is jointly known and understood by each party, so that cues have a similar meaning.

Communication about the cues that can change the business relationship begin the sensemaking process. Figure two shows the sensemaking and communication processes where each manager brings cues and interpretations to the sensemaking process. The cues arise from events that occur in either firm or from other connected firms in the network where actors are embedded.

Figure 2: Sensemaking and communication by the Managers of Two Firms Interacting



(Source: Medlin and Törnroos 2011b)

The focus of the sensemaking process is within the in-between (see figure two) and is on either the resource and activity structure or the product being exchanged. The in-between is ‘past-loaded’; as understanding relies on sensemaking of past events. The in-between is ‘future loaded’; as the nature of the presumed understanding has consequences for managerial action (Hedaa and Törnroos 2008). In addition, the joint effort in interaction relies on both parties to find solutions for present and future value exchange between the companies. As the firms interacting are seen as being embedded in larger network relations the extended connectedness of firms also impacts on the sensemaking and the understanding of the in-between.

In figure two, the in-between is shown as a time-space between the managers. This time-space is composed of jointly understood events, history and potential futures. Some cues maybe immediately present within the in-between, although this is not necessarily so. In figure two, the in-between is shown as less than the focus of communication to note that some meaning ambiguity always remains on the part of both managers. For example, the understanding of self and collective interests is likely to be more ambiguous than for specific and mutual interests, which are likely to have been jointly explored in an open communication based relationship and so are more included within the in-between focus.

One issue with figure two is the loss of the incremental and time elongated nature of sensemaking, rather the figure shows time as a period with time flow allowing communication in the present period. These distinctions between time as flow and periods are elaborated by Halinen, et al. (2012). Introducing time flow beyond the present period spreads out the processes of sensemaking interaction in the following manner:

- (i) A cue arises either within a firm, the business relationship and/or the network. Initial detection and interpretations can occur by a manager in either firm. Initial interpretations are unlikely the same if a cue is simultaneously detected, unless that cue already exists within the in-between. The most likely process is one manager will need to mediate the event and cue for the manager of the other firm.
- (ii) The in-between of the two managers first ‘arises into being’, as they communicate openly concerning the event, the focus of their concern and the future outcomes for the relationship. The managers proceed to develop a plausible understanding among competing meanings of future relationship possibilities.

- (iii) The in-between of the two managers is apparent when a plausible understanding provides insight into affects on (a) the business relationship, and (b) each of the firms in the relationship. Both sets of insight are required as each influences the other. The existence of multiple understandings is not precluded.
- (iv) Next the meanings are communicated to managers within each of the firms. This takes some time. There are many ramifications, as sensemaking proceeds through greater numbers of managers across the two firms. Towards the end of this period the two managers make decisions, harness resources and implement changes.
- (v) The final part of sensemaking, taking even greater time, is the diffusion of the ramifications of the relationship change to other firms in the network.

The sensemaking process results in a mediated and created network reality, with sensemaking being a human aspect of meaning creation including combining time and space. The space is represented by the connected network structure where firms reside as well as the mental space between them (i.e. how the relationships and actors are perceived and seen as existing). What defines the two-sided elaboration of sensemaking is the way the contexts act as a structure through time that stabilizes meanings. In addition, the in-between, as a jointly defined area of reality, is an important element of interactive sensemaking.

In the following section we discuss adaptation as a process that goes along with the network development as a processual phenomenon. Adaptation is needed when actors align their ideas, processes and technologies.

Adaptation

Adaptation was noted in the first interaction and network theories (Brennan and Turnbull 1999; Brennan et al. 2003; Canning and Hanmer-Lloyd 2002; Ford 1980; Håkansson 1982; Turnbull and Valla 1986). Dyadic adaptation has been defined by Brennan et.al (2003, 1639) as “.... behavioral or organizational modifications at the individual, group or corporate level, carried out by one organization, which are designed to meet the specific needs of one other organization”. Canning and Hamner Lloyd (2002, 615) aim to model adaptation processes in inter-organizational relations and define adaptation more broadly: “Modifications at individual, corporate level which are carried out by *one or both parties* in an exchange relationship in order to suit new needs or conditions and which are designed initially for that specific relationship”. They also pinpoint that adaptation in business relationships and networks has been a neglected area for research.

Hallén et al. (1991) see long-term relationships to be an interactive process including both exchange as well as adaptation elements. Adaptation is closely related to the nature of the interaction between the parties involved in the relationship (Johanson and Mattsson 1992). Silver and Vegholm (2009) focus on adaptation in business dyads in banking-SME relationships, by looking at the interaction process through interpersonal communication. Interactive business relationships were seen in these studies as being communicative and cognitive processes taking place *between individuals* involved in the interaction process. We see this viewpoint also being relevant and find it crucial to analyze the interactive communication from the viewpoint of the individuals, in order to understand interaction between two parties. It is in the dialogue between

personal actors that process emerges (cf Olkkonen et al. 2000) and creates sensemaking. Thus, the in-between concept can help analyze adaptation processes.

Some clarity is required between adaptations as an outcome, where a change is becomes apparent in a feature of a business or a relationship; and adaptive processes that are the way changes are enacted between parties. Considering the distinction requires a number of conceptual tools: time and the in-between. Here we use the term adaptation for the outcome; the change is apparent within the focus of the in-between by at least two actors outside of the focal relationship. Thus, other actors are relying on the focal relationship to make decisions and proceed with adaptive processes. This definition means adaptation is a socially understood outcome of a change process. The flow of time is important in this definition because the adaptation is understood at a point in time within the in-between, but exists as an understanding given meaning by past and future interpretations of intentions relative to other actors. Thus, an adaptation outcome is to take up Hedaa and Törnroos's language (2008) past and future loaded.

By comparison adaptive processes are continuing adjustments to resources, activities and actors which occur both outside and in-side the focus of the in-between. These changes, when they occur within the in-between focus, are understood socially as process and as developments towards an adaptation. Thus, a distinction is that adaptive processes occur within a firm and/or a business relationship, and so their meaning is locally attributable to understanding change, with those within the focus of the in-between understood and acted jointly upon.

Adaptation, as attributed by third parties, is an important distinction. When other firms note an adaptation they begin to interact on a new bases with the firms in the business relationship. Now begins the reverberations of the adaptive processes from inside a business relationship in two directions, across the network via business relationships and back to the firms in the focal relationship, because of the change in interaction bases.

Addressing the question of interests and adaptations, the clear answer is that adaptations sought to meet the specific interests of partners. Adaptations can be one-sided and follow the needs of a firm's specific interest. Also adaptation can be mutual, where both parties make adaptations to meet mutual interests with in the relationship, in which case more than firm specific interests are met. Mutual adaptation forms an important relational mechanism and can be treated as investments and an important offering as well. Again, having an individual perspective, adaptation is mediated through individual managers in organizations they represent in this process.

The event source for the need to adapt, and whose interests are at stake, are important considerations of managers in dealing with change. The adaptive processes are either reactive and/or proactive in relation to time (see Table 1). The adaptation outcomes always are attributed later when third parties note an outcome.

Table 1. Reactive and Proactive Adaptive processes in business relationships

	Reactive adaptive processes	Proactive adaptive processes
Instigation to change – event source	Outside the relationship (in firm or network)	The source is within the relationship. Which firm is the source is of no consequence as the process is mutual.
Change position in time	Present	Future
Managerial focus	Maintain status quo/routine	Change

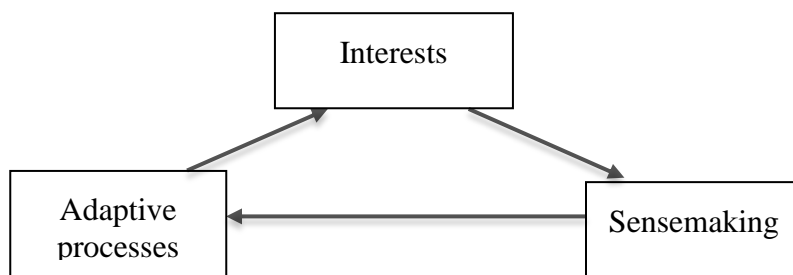
(Source: Adapted Medlin and Törnroos 2011a)

How relationships develop in general is affected by how adaptive processes are carried out between business partners. Reactive adaptive processes exist at the heart of interaction, as a social process between interacting parties (cf Hallén et al. 1991). Proactive adaptive processes are a part of strategic decision-making concerning how to deal with relationships together with sourcing and resource needs etc. (see Brennan et.al. 2003). The social aspect of adaptive processes motivates our research and provides an indication of why we have chosen an individual managerial-human perspective to the issue.

Interests, sensemaking and adaptation in the network

Some issues related to the foregoing discussion needs to be put together in order to summarize our key points. First, an adaptive process is affected by three basic temporalities, i.e. the history of the relationship, its current status and future outlook. Second, adaptive processes are affected by the source or the need to adapt and the interests of the parties. Is the source coming from inside the relationship (one or both parties?), or from the relations where firms are connected, or from the outside of the relationship, and what interests are at stake? How do different interests affect understandings and alternate solutions? Third, the interactive sensemaking process comes into play within the in-between, where cues are detected and sense is given and taken and created through a double, or two sided, sensemaking process across and inside the in-between (see figure 2). Fourth, the sensemaking is affected by the interest of being related to each other and the developing business of the parties. Here it is argued that specific and self-interest as well as a mutual and collective interest play a role, as these interests are nested in the same space and affect sensemaking and adaptive processes (Figure 3). We see here an ongoing interplay between interests, sensemaking and adaptive processes.

Figure 3. Interests, sensemaking and adaptation in networking processes



We are inclined to believe various interests of the parties' starts the networking process. Individual self-interest and specific interest as well as mutual and collective interests have a bearing on the interaction process between business partners. The enmeshed specific and mutual interest of the partners in particular evoke the sensemaking process together with mutual (network) and more general collective social interests of the parties. As a result of sensemaking there is a call for action by the parties that triggers the potential adaptation processes. This adaptation process is again reflected in the interests of the parties and their mutual and collective characteristics and how these are seen to affect their on-going and future business.

The research approach

The case study reported here follows a longitudinal processual approach and the theoretical outline of the paper. Case studies are used in business marketing studies with the aim to understand phenomena in their real-life context as well as in developing theory (Eisenhardt 1989; Halinen and Törnroos 2005). The longitudinal approach allows researchers to discern changes in interests and also network development.

Halinen et.al. (2012) proposes different methods for unfolding processes in business network research with the use of a human time “where events are connected to each other in meaning and time is a property relative to the entity” (ibid, 2016). The meaning of time and timing connects to how human actors understand and react to events and how events have unfolded and created a networking process that we study (Hedaa and Törnroos 2008). The experiential data of actors is collected as we study meaning creation (i.e. sensemaking) of managers' own experiences and perceived events in their contextual space (Weick 1995, Weick, et al. 2005). Thus, interviews are presented in the form of narratives or story-telling schemes. This constructivist viewpoint is plasticized here as well.

Our approach follows a point mapping idea where researchers plunge into the process at many points in time and collect data through stories told by relevant informants. The stories tell about the activities and track what has been taking place and why (Halinen et.al. 2012, 219). In applying the point mapping technique events as they have been told in interviews and transcribed and interpreted by the researchers make up the processes under scrutiny. The method treats time in the form of periods, it is retrospective in scope and it looks at the process at many points in time. It also reconstructs and deconstructs events, as key informants are telling them in semi-structured interviews. The researchers reside outside the events and the context, as it is hard to get closely involved in the specific case (Halinen et.al. 2012). The transcribed narrative data has thereafter been reduced through interpretation by the researchers. As we have conducted many interviews the data is considered thick and rich enough to form a base for naturalistic enquiry and analysis (Lincoln & Guba 1986). The use of many informants also secures that important events are not lost. The data provides specific situational circumstances which are positioned in the past, present, and future; so providing interpretations of relationship and network change.

An emerging Network - Biofuel case from Australia

Background

Biofuel production is one of the great global concerns. Producing biofuel in an economically and socially sound manner and meeting environmental demands is possible in a number of different ways. The biofuel Association in Australia has the following information at their home pages concerning biofuel and its prospects.

“The feedstock with ultimately the most potential is algae because it has significant potential for a high yield per hectare of land. Algae can yield 100,000 liters of oil per hectare whereas the next best crop is palm oil at around 5,000 liters per hectare. In addition high quality land is not required for algae and only non-potable water is needed. ... [further] the waste gas streams from power stations [are viable] to convert algae to biodiesel. At this point in time however, we would need about one hundred square kilometers of algae ponds to meet Australian needs, so we still have a while before algae is both economically viable and physically possible.”

(Rural Industries Research and Development Corporation 2007)

Economically, with oil prices steadily rising, new business opportunities and needs arise. Secure alternate energy sources are required, which have a low environmental footprint in production and distribution and result in lower greenhouse gas emissions. Best are energy sources that do not compete for agricultural inputs.

The actors and the initial events

The initial actors are presented in Table 2.

Table 2: Actors

Individual	Organization
David Lewis (PhD civil engineering)	Associate Professor, University of Adelaide, Australia. Also employed by Muradel Pty Ltd
Michael Borowizka An internationally known algae expert.	Professor of Marine Phycology and Director of Algae R&D Center at Murdoch University, Perth.
Gerald Barker	CEO of Muradel Pty. Ltd. Joint Venture CEO of SQC Pty Ltd (a major shareholder of Muradel)
Pete Ashman (PhD energy applications)	Associate Professor, University of Adelaide, Australia
Ollie Clark	Board Chairman, SQC Pty Ltd

DL entered into the Adelaide University School of Chemical Engineering in 2007 and started to set up his own research group, working with issues around algae (e.g. nutritional perspective of aquaculture, therapeutic actives). At the same time came scientific and engineering press regarding developing algae production/growth on a large scale. The idea of converting algae biomass to biofuel has been around since the 1930s. DL, with an interest in algae production, met PA who had an interest in energy production. The surrounding scientific network at the University (reflecting specific interest) aligns at this stage with the collective societal and environmental interests. This formed the starting of the first steps and sensemaking processes.

“We were just picking up what other people were doing and we were quite happy to get on the bandwagon with everybody else. And so as I was reading this kind of stuff in the press it occurred to me that I (PA) had an interest in energy. David had an interest in algae, let’s put these two interests together” (PA interview).

Adaptations needed at this stage could be described as finding the right things to do, funding the process and obtaining the needed resources and finding the right people to work, as well as clarifying the project. An existing energy cluster at the university formed the site of the project and some research funding was given to the cluster. At the same time other research funding schemes were identified. In a rush, DL and PA put together an application for funding from the Asian Pacific APP scheme. They received feedback on what was missing from their application - but no funds.

Second phase

After this initial phase new events started. About a year after the initial application a call was received from a person involved in the APP scheme saying they were looking forward to another proposal from the team. At the same time the team recognized they needed someone with know-how concerning growth of algae on a large scale. This started a sensemaking process about how to act.

“The missing piece of that puzzle is MB at Murdoch (University). ... even for people working in algae, the concept of using algae for energy was relatively new, even though a lot of work was done decades before, which MB was well aware of. So, DL said let’s have a chat with MB and see how we go.” (PA interview..)

This led to an agreement and MB took charge of the process of putting the application in place. This again set sensemaking processes in motion. The researchers decided that algae growth should be complemented with harvesting and these two processes should be optimized together in a larger-scale plant. Finding a hotlist of algae species was made an important topic of the new application. MB took a considerable part in the application process.

Third phase

The funding was given (forming a triggering event) and the work could start. An outdoor pilot plant located in Karratha in northern Western Australia was developed, and operated for four years taking most of the money. MB had access to private companies who provided the land and worker accommodation on the basis of specific interest in the form of access to information about the plant. Many issues needed sensemaking by the researchers. This concerns the different parts of the project. Some problematic issues were the following:

1. access to the plant on site for solving problems with harvesting and growth, controlling environmental factors in an open pond system.
2. a local partner LX (Lexall) Ltd was interested in the planning of earnings and economic modeling. They withdrew when the long time horizon to a cash return became clear.

Fourth phase-SQC and Muradel

SQC is a company that became known to DL and PA at the time of the APP application. The founder, Dr. John Baxter, (now 92 years of age) had developed a retirement self-interest and

embryonic business in extracting biomass from algae as a project for solving fossil fuel problems for mankind. SQC had a specific interest in freshwater algae and had promising results with some strains. But it was realized that in Australia a more promising opportunity was growing algae in saline water.

“... we became aware of SQC as a company that was interested in algae, energy from algae, and they’ve been collaborating with some people at Flinders University. SQC were, and still are, very interested in a particular type of algae, which is called Botulococcus brunii. ... The problem with this particular algae is that it normally only grows in freshwater and that has big problems, and it’s very slow growing, which means that it’s very prone to being out-competed by other algae, and susceptible to predation from things that like to eat algae. So we were never really interested in the Botulococcus story because we could see those problems with it, but we were very interested in talking to SQC about our concept, which was large scale production of marine micro-algae.” (PA interview)

“Eventually they ... ended up committing half a million dollars to the APP Project, out of a budget of about two and a half, I think we had. they were interested in broadening their scope with algal research and joined us as industry partner and this was with Murdoch University as well and it was agreed that these projects formed a Joint Venture company” (DL and GB interview).

The Muradel Joint Venture was formed in 2010 and intellectual property was vested into Muradel along with all capital including the Karratha plant. Regarding the adaptation process the specific interest of SQC was important.

“... but the timing was also at the point of the project where we were really starting to think about what was going to come after the project, so when this project is going to finish in 12 months time - then what? And of course that was a question that SQC was interested in as well, because look we’re going to put half a million dollars in to fill up your black hole that you have created at Karratha, but what are we going to get out of it? Obviously for them it was a long-term thing, so getting our hands on their cash was delayed for a while, as we worked through some of these post APP commercialization questions, as to how we were going to move this forward”. (PA interview)

DL mainly drove the development of the relationship with SQC, while MB increasingly took a backseat and eventually retired. Interestingly an Indian company ABAN was important in funding SQC’s contribution to Muradel. ABAN makes money by leasing oil-drilling equipment, but has taken a long-term specific interest in SQC and now Muradel. ABAN appears to pursue strong self and collective interest activities in the social arena. While ABAN looks into the future by investing into the SQC and Muradel, there is also a social consciousness at play.

The Karratha pilot plant has been successful:

“...we have proven we can maintain continuous production with daily-harvest of biomass and all our energy costs are laid out, so that’s really what the last year was all about” (DL Interview 29 January 2013).

Phase 5

The current plan is to develop and test a larger and commercial plant in Whyalla, South Australia. This city on the desert edge is an industrial hub with plenty of sunshine, seawater and rail linkages. The Karratha pilot plant has been closed. New organizations, such as the Whyalla City Council and their economic development department, have been involved in sensemaking and adaptation (Table 3 lists the actors in this phase).

Table 2: Actors in Phase five

Individual	Organization
David Lewis (PhD civil engineering)	Associate Professor, University of Adelaide, Australia. Also employed by Muradel Pty Ltd
Gerald Barker	CEO of Muradel Pty. Ltd. Joint Venture CEO of SQC Pty Ltd (a major shareholder of Muradel)
	Muradel Pty Ltd
Ollie Clark	Board Chairman, SQC Pty Ltd
Mr Pollock (Mayor)	Whyalla City Council
	Whyalla City Economic Development Department
	Australian Renewable Energy Agency

The following quote gives an idea of the Council’s collective interests and specific interests in the new pilot commercial plant.

“ ... the proponents of the project were very appropriate and transparent and we believe we have formed a very solid partnership with the company. Mr. Pollock said Whyalla provided the perfect conditions for the project and hopefully other developers of projects of a similar nature will look at Whyalla as a location. Whyalla is the perfect site for such a proposal given the closeness to the main ingredient, which is seawater, and of course 301 days of sunshine which is also a strong factor. The initial project will see two 20 square meter ponds made and demountable buildings including a laboratory used to enable their removal at the close of the project. The pilot project will be of a very small nature some two hectares and will not have any environmental impact on the area or the community. If the demonstration site operation proves successful though, a production scale operation of up to 1,000 hectares would be developed hopefully within the Whyalla region.” (Whyalla News, reported 29 January 2013)

A two-year plan is now set to get the new plant in order and running. At the end of 2014, *“this goes commercial or it doesn’t, so there’s a busy two years coming up” (DL interview 29 January 2013)*

“So we’ve sort of got those issues of salt and nutrients under control. Now, with the biomass conversion the waste products from that are residual biomass, so the oils we remove from it, and you get carbon dioxide produced in the reactor so the residual biomass – we can recover the nutrient from that. We put that back in the pond.” (DL)

Growth optimization technology has been developed at the University of Adelaide.

“We need CO₂ to control the pH of the ponds for some hours during each day - not all day but key parts of the day - so we can get our CO₂ from this reaction. So, actually, a fully integrated system is what’s going to be put at Whyalla, to hopefully have no emissions – zero emission - that’s our goal. Obviously, you’re going to get losses in the system even though the system is 100 per cent perfect so we will have to do a bit of top-up nutrient and a bit of top-up CO₂, but we’re hoping for zero emission.” DL

In this phase the funding comes via SQC and ABAN. However, Muradel has also gained a Federal Australian Government grant of A\$4.4 million, funded through the Australian Renewable Energy Agency’s (ARENA) Advanced Biofuels Readiness Program. This scheme is designed to accelerate commercialization of biofuel technologies.

Concerning adaptation DL has now transferred half-time to become Muradel’s technology officer and Muradel is starting to find people with managerial skills inside the energy industry. Meanwhile, researchers and staff from Murdoch have taken a back seat, with only one researcher transferring into Muradel. The association with the University of Adelaide remains strong as DL has a number of PhD students working in related fields and also Muradel seeks other biofuel research located at the planned Whyalla plant.

“So Murdoch has, through lack of, I suppose, initiative, become a silent shareholder in Muradel. The University of Adelaide and Murdoch have equal shares that are being diluted. Adelaide Uni is definitely maintaining strong interests, so the R&D money is going both ways which is great for grants and research. We need two new post-docs for this project, but Murdoch have not been proactive and I don’t know why, because to me it’s a missed opportunity, because I’m an engineer, I know all these biology projects we should be doing. ... I don’t understand why.” (DL)

Analysis of the case

The emergent biofuel network was initiated by two academics. At the beginning was individual self-interests by two researchers and a sensemaking process, including cues and a basis for action. There was an alignment of know-how and joint interests of these two individuals, one interested in algae and the other in energy. An initial trigger to consider was the growing awareness of global energy challenges, a collective interest, providing cues to suggest the potential to grow algae at a large scale for biofuel production. Cues and sensemaking were also developed from writings and calls for the need to develop biofuels for the future. The individuals display some common but also some different understandings of the interactions being undertaken. This represents the distinction of the in-between, where understandings are mutual, and other understandings which are individually held. Next, a proactive adaptive process started with finding a way to finance the ideas that came through in this first phase.

The process went on by finding new partners with complementary skills and resources for conducting further research and enabling access to funding. These are indicators of the researchers’ mutual and specific interests. This process was also facilitated by a shown interest from governmental bodies, a form of collective interest, to go further with developing biofuel from algae. Finding research partners needed considerable proactive adaptive changes by the

partners to find ways to deal with the issues at hand. In research huge challenges were finding the right algal strains for salt-water growth, growing, harvesting etc.

As the process unfolds the history, future and the present situation all affect sensemaking and the adaptive processes of the counterparts. These events gave new signals and started a new sensemaking process for the team to develop their ideas in a more concrete manner. Again members of the team presented different and also similar understandings, showing that an in-between was created. Also the location and building of the power plant and need for collaboration with the test plant in Karratha was an issue and started a new proactive adaptive process to find the new location.

In the more recent phases of the process many of the obstacles have been solved. New arrangements in the network have materialized by the inclusion of SQC and the JV Muradel for developing the ideas and the network into a business organization for the future. Mutual and self-interests run this phase strongly and also the personal research interest of some key partners, including a collective and specific interest. This started new sensemaking for action by organizing the network and thereafter taking action by terminating the activities in Karratha and the decision to build a pilot plant in Whyalla, in Southern Australia. This, again, started a new adaptive process with new institutional and business actors in Whyalla, as well as the governance and management of the business processes and finding business partners, to name a few key issues.

Case conclusions and implications

The paper presents three conceptually interlinked processes about how an emergent business network develops over time in a specific context. The conceptual framework aims to highlight networking process and development as it unfolds. This threefold perspective integrates the (i) diverse interests in the social as well as relational spaces of the interacting parties in their contextual situation at a specific point in time, with (ii) the following sensemaking and interactive processes that materialize and (iii) the following need for adaptive processes between interacting parties.

This forms an intertwined networking process relating to the interests of individuals and groups of actors and their sensemaking along with different in-betweens, linking these to the adaptive processes that generate continuous emergence and change of the network. An individual actor perspective to this network process is taken here. This reflects well the early phases of the emergent process under scrutiny, as well as enabling to find the “root causes” for the process to start. We also use those personal informants that have been acting and interacting at these early developmental paths, in our data gathering.

The method consists of a qualitative processual case study (Van de Ven 1992, Pettigrew 1997). The process is followed as unfolding events over time, as perceived and highlighted by the informants, using the point-mapping idea (Halinen et.al. 2012). The narrative data has been transcribed, interpreted and reduced to its key constituents (Tesch 1990). These reduced narratives have been read through by informants and accepted as being in line with what was actually said and what events came to the fore.

The case reflects the conceptual ideas and the methodological framework in a consistent manner. The conceptual ideas align well with the process, as it unfolds in the biofuel network. Interests (aligning closely with Fig. 1 and 2) can be seen when different events in the process unfolds. Diverse sets of mutual understanding are developed as the in-between of different actors involved in sensemaking. Activities are undertaken to adjust relationships and make adaptations to the network.

Implications for research

We have noted that the model aligning the issues of interest as a driver and combining it with sensemaking and the in-between, and adaptive processes is a promising avenue for the study of emergent business network development. In particular the idea of the in-between for inter-organizational sensemaking adds some clarity to the issues around ambiguity of communication, adaptive processes and business goals in joining and shaping a business relationship. But further the in-between seems a useful means to clarify differences in interests between parties interacting in a network. Combining the concepts of interests and the in-between offers potential new research directions.

But our processual approach and model has its challenges as well. It can be problematic to clearly distinguish and separate the three processes of the model. Interests, sensemaking and adaptive processes are to some extent enmeshed and rely on each other at least at some specific stages where all seem to be present and have a bearing on the process. The issue maybe one of timing, with small and longer periods of sensemaking within each other, or equally all are simply fully enmeshed in a complex reality. The three main conceptual elements are, however strongly present in the process under scrutiny and usually follow each other. The interests start the change to be visible or notable for the actors (and potential actors as well) and this is a situation that is affected by sensemaking is causing change and adaptive processes.

The role of interests, from both the social and relational arenas, is a particular strength of the research presented here; and one requiring further research. We see that mutual interests seem to represent more than specific and self-interests, whether this is only the interests created by the relationship or is something that arises from outside the relationship. The relative nature of interests suggests the later, but this issue deserves further clarification.

A specific interest both at a social as well as at a personal or business arena forms a trigger for development. These interests can lead to new ways to adapt, e.g. extract large amounts of biofuels from biomass as in the case presented. The interest cannot be developed alone without other actors with complementary interests and skills. The interests do need to overlap, however. This is evident in that algae was considered a potential fuel source for a long time, but the sets of interests have not begun to combine until now.

Of note is that interests change as the process unfolds. In this case, a research orientation from the start has now shifted towards a business orientation and the interests have expanded and adjusted. We also note a change in the nature of the actor, with more organizational actors

entering the process, but still with important connections between individual actors. Now economic, market and relational issues prevail together with a scientific orientation.

Finally, the distinctions between reactive and proactive adaptive processes and adaptations in a network context are somewhat clearer in the present research. The case study is primarily a proactive set of adaptive processes with adaptations found at each phase. As the adaptations of changed network configuration are noted by third parties the researchers have found new opportunities have opened. But the past is always present in the remainder of the network and this forces reactive adaptive process on the actors at the same time as they attempt to re-shape the network to bring forth their innovation. Again there are opportunities for further research concerning the adaptive processes and adaptation through time.

References

- Batt, P. J. (2008) "Building social capital in networks", *Industrial Marketing Management*, vol. 37, no. 5, pp. 487-491
- Brennan, R. and Turnbull, P. W. (1999) "Adaptive Behaviour in Buyer-Supplier Relationships", *Industrial Marketing Management*, vol. 28, no. 5, pp. 481-495
- Brennan, R., Turnbull, P. W. and Wilson, D. (2003) "Dyadic Adaptation In Business-To-Business Markets", *European Journal of Marketing*, vol. 37, no. 11, pp. 1636-1665
- Brito, C. M. (2001) "Towards an Institutional Theory of the Dynamics of Industrial Networks", *The Journal of Business & Industrial Marketing*, vol. 16, no. 3, pp. 150-166
- Canning, L. and Hanmer-Lloyd, S. (2002) "Modelling the Adaptation Process in Interactive Business Relationships", *The Journal of Business & Industrial Marketing*, vol. 17, no. 7, pp. 615-636
- Colville, I. and Pye, A. (2010) "A Sensemaking Perspective on Network Pictures", *Industrial Marketing Management*, vol. 39, no. 3, pp. 372-380
- Corporation, R. I. R. a. D. (2007).
- Eisenhardt, K. M. (1989) "Building Theories from Case Study Research", *The Academy of Management Review*, vol. 14, no. 1989, pp. 532-50
- Ford, D. (1980) "The Development of Buyer-seller Relationships in Industrial Markets", *European Journal of Marketing*, vol. 14, no. 5/6, pp. 339-354
- Frazier, G. L. (1983) "Interorganizational Exchange Behaviour in Marketing Channels: A Broadened Perspective", *Journal of Marketing*, vol. 47, no. Fall 1983, pp. 68-78
- Geersbro, J. (2004), "Sensemaking in Business Networks – Making Sense of Business Networks", *Proc. Proceedings of the 20th Annual IMP Conference, Copenhagen, Denmark*, pp. CD Rom.
- Håkansson, H. (1982), *International Marketing and Purchasing of Industrial Goods: An Interactive Approach*, Wiley, Chichester
- Håkansson, H. and Johanson, J. (1992) A Model of Industrial Networks, in: *Industrial Networks: A New View of Reality*(Eds, Axelsson, B. and Easton, G.) Routledge, New York, pp. 28-34
- Håkansson, H. and Snehota, I. (1989) "No Business is an Island: The Network Concept of Business Strategy", *Scandinavian Journal of Management*, vol. 5, no. 3, pp. 187-200
- Håkansson, H. and Snehota, I. (1995), *Developing Relationships in Business Networks*, International Thomson Business Press, London

- Håkansson, H. and Waluszewski, A. (2002) "Path Dependence: Restricting or Facilitating Technical Development?", *Journal of Business Research*, vol. 55, no. 7, pp. 561-570
- Halinen, A., Medlin, C. J. and Törnroos, J.-Å. (2012) "Time and process in business network research", *Industrial Marketing Management*, vol. 41, no. 2, pp. 215-223
- Halinen, A., Salmi, A. and Havila, V. (1999) "From Dyadic Change to Changing Business Networks", *Journal of Management Studies*, vol. 36, no. 6, pp. 779-795
- Halinen, A. and Törnroos, J.-Å. (2005) "Using Case Methods in the Study of Contemporary Business Networks", *Journal of Business Research*, vol. 58, no. 9, pp. 1285-1297
- Hallén, L., Johanson, J. and Seyed-Mohamed, N. (1991) "Interfirm Adaptation in Business Relationships", *Journal of Marketing*, vol. 55, no. 2, pp. 29-37
- Harrison, D., Holmen, E. and Pedersen, A.-C. (2010) "How companies strategise deliberately in networks using strategic initiatives", *Industrial Marketing Management*, vol. 39, no. 6, pp. 947-955
- Hedaa, L. and Törnroos, J.-Å. (2008) "Understanding Event-based Business Networks", *Time and Society*, vol. 17, no. 2/3, pp. 319-348
- Henneberg, S. C., Naudé, P. and Mouzas, S. (2010) "Sense-making and management in business networks—Some observations, considerations, and a research agenda", *Industrial Marketing Management*, vol. 39, no. 3, pp. 355-360
- Ivens, B. S. and Blois, K. J. (2004) "Relational Exchange Norms in Marketing: A Critical Review of Macneil's Contribution", *Marketing Theory*, vol. 4, no. 3, pp. 239-263
- Johanson, J. and Mattsson, L.-G. (1992) Network positions and strategic action: An analytical framework, in: *Industrial Networks: A new view of reality*(Eds, Axelsson, B. and Easton, G.) Routledge, London
- Lane, D. and Maxfield, R. (1996) "Strategy under Complexity: Fostering Generative Relationships", *Long Range Planning*, vol. 29, no. 2, pp. 215-231
- Lenney, P. and Easton, G. (2009) "Actors, Resources, Activities and Commitments", *Industrial Marketing Management*, vol. 38, no. 5, pp. 553-561
- Macneil, I. R. (1981) "Economic Analysis of Contractual Relations: Its Shortfalls and the Needs for a Rich Classifactory Apparatus", *Northwestern University Law Review*, vol. 75, no. 6, pp. 1018-1063
- Macneil, I. R. (2000) "Relational contract Theory: Challenges and Queries", *Northwestern University Law Review*, vol. 94, no. 3, pp. 877-907
- Medlin, C. J. (2006) "Self and Collective Interest in Business Relationships", *Journal of Business Research*, vol. 59, no. 7, pp. 858-865
- Medlin, C. J. and Törnroos, J.-Å. (2007) "Inter-firm Interaction from a Human Perspective", *Finanza Marketing & Produzione*, vol. 25, no. 1, pp. 41-56
- Medlin, C. J. and Törnroos, J.-Å. (2011a) In *IMP 2011* Glasgow.
- Medlin, C. J. and Törnroos, J.-Å. (2011b), "B2B- Interactive sensemaking and the in-between", *Proc. ANZMAC 2011, Perth*, pp.
- Möller, K. (2010) "Sense-making and Agenda Construction in Emerging Business Networks: How to Direct Radical Innovation", *Industrial Marketing Management*, vol. 39, no. 3, pp. 361-371
- Neill, S., McKee, D. and Rose, G. M. (2007) "Developing the organization's sensemaking capability: Precursor to an adaptive strategic marketing response", *Industrial Marketing Management*, vol. 36, no. 6, pp. 731-744

- Olkkonen, R., Tikkanen, H. and Alajoutsijärvi, K. (2000) "Sponsorship as relationships and networks: implications for research", *Corporate communications: An international journal*, vol. 5, no. 1, pp. 12-19
- Ordanini, A. (2011) "The Ties That Bind: How Cooperative Norms and Readiness to Change Shape the Role of Established Relationships in Business-to-Business E-Commerce", *Journal of Business-to-Business Marketing*, vol. 18, no. 3, pp. 276-304
- Silver, L. and Vegholm, F. (2009) "The dyadic bank-SME relationship: Customer adaptation in interaction, role and organisation", *Journal of Small Business and Enterprise Development*, vol. 16, no. 4, pp. 615-627
- Tesch, R. (1990), *Qualitative research: Analysis types and software tools*, Routledge
- Turnbull, P. W. and Valla, J.-P. (Eds.) (1986) *Strategies for International Industrial Marketing*, Croom Hem, London.
- Tuusjärvi, E. and Möller, K. (2009) "Multiplicity of norms in inter-company cooperation", *Journal of Business & Industrial Marketing*, vol. 24, no. 7, pp. 519-528
- Van de Ven, A. H. (1992) "Suggestions for Studying Strategy Processes: A Research Note", *Strategic Management Journal*, vol. 13, no. S1, pp. 169-188
- Webster, J. F. E. and Wind, Y. (1972) "A General Model for Understanding Organizational Buying Behavior", *The Journal of Marketing*, vol. 36, no. 2, pp. 12-19
- Weick, K. E. (1979), *The Social Psychology of Organizing*, Addison-Wesley, Reading, Mass.
- Weick, K. E. (1995), *Sensemaking in Organisations*, Sage, California
- Weick, K. E., Sutcliffe, K. M. and Obstfeld, D. (2005) "Organizing and the Process of Sensemaking.", *Organization Science*, vol. 16, no. 4, pp. 409-421
- Welch, C. and Wilkinson, I. (2002) "Idea Logics and Network Theory in Business Marketing", *Journal of Business-to-Business Marketing*, vol. 9, no. 3, pp. 27-48