EVENTS AND TEMPORALITY IN BUSINESS NETWORKS: A CONCEPTUAL ANALYSIS

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ABSTRACT
Perspectives of temporality in networks in business marketing is analysed in this conceptual paper. Core foundations of business network theory are analysed taking especially time and timing into consideration. A model of event-based networks is developed in grasping the temporal nature of business networks. The findings suggest extensions of network theory, methods and models using events as a promising but complex avenue for research.

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1. INTRODUCTION

In contemporary research in marketing the role of relationships and networks have gained increasingly ground as a core perspective, or paradigm, for marketing. This concerns especially business and international marketing as well as marketing of services (Ford (ed.) 1990, Håkansson & Snehota (eds.) 1995, Hägg & Johanson (eds) 1982, Möller & Wilson (eds) 1995, Sharma (ed.) 1995, Webster 1992). When a new paradigm constitutes itself some contributing insights can be developed. In the following the existence of business networks in industrial markets form a start for developing viewpoints which have, so far, not been well covered within this approach. The network perspective has been developed in other social science for decades and can be used as a fruitful metaphor for understanding social phenomena. This has not been the case within the mainstream of marketing, until quite recently.

Time and temporality has been more in extenso studied within sociology and other social sciences which could enrich the understanding of change and evolution of business networks (see e.g. Adam 1995, Clark 1985, Gurvich 1964). Developing models about the processual dimensions of business networks requires, to our notion, an excursion into other social sciences. Using ideas and theories as springboards for a more coherent understanding of these mainly socially constructed business networks is a promising avenue (for a closer examination of the use of the network metaphor see e.g. Araujo and Easton 1996).

The interaction and network school of thought in marketing has been strong especially in Europe as opposed to the classical more ‘economic-based’ marketing management approach, still dominating the field, especially in North America. The research in business marketing have been mainly nomological-deductive in the U.S. but especially recently - increasingly inductive and empirically driven in Europe. In this paper the more “European-inspired” track is followed as the network approach to marketing is developed mainly within this tradition.
The network approach to marketing uses temporally loaded terms and vocabulary. The use of theoretical constructs and the relation to practical research, theory and models is raised here with the perspective taken on time, timing and especially through events in understanding business networks.

The paper is divided into four sections. First, a critique of actor based business network models is made by extending the basic notions in the model to include time, timing and events in the study of business markets and marketing. Second, propositions for the study of event networks as a theoretical base is presented taking some methodological aspects into consideration. Third, ideas are put forth for extending the horizon of event-based marketing networks, deepening the temporal concepts and the event concept in particula. Fourth, suggestions for further research and empirical studies of business networks using the event-network model are made.

2. NETWORKS AND TEMPORALITY

Networks have been defined as “A set of connected exchange relationships” (Cook & Emerson 1978). This general notion can be directly put into a business context. The offered perspective indicates that actors (defined as individual decision makers, organisational subsets and firms) are interconnected and exchanges take place forming links, ties and bonds between business actors through the combination of activities, actors and resources (The so-called ‘ARA’-model based on actor networks). In the proposed model the actors in business markets often form long-lasting relationships by developing trust and commitment between interacting partners (between buyers and sellers, intermediaries, service providers and other core actors) (Håkansson & Johanson 1985, Håkansson 1987, Håkansson & Sneehota 1995). These note some of the core theoretical and empirical concepts used within the approach (Håkansson, 1987, Håkansson & Sneehota 1995). The offered perspective means, consequently, that more “socially constructed” phenomena come into the fore than in the traditional (neo classical) notions of the marketing management approach. This does
not, however, indicate that the economic variables should be forgotten, but should be considered as being *embedded into the process of interaction* between the members of the business network. One is inclined to critically analyse the relevance of the so-called ARA-model. The model states that networks are formed in business markets as an interplay between actors who perform activities and possess (and control) certain resources and assets which are combined and create business networks as the main factors for the establishment of long term relationships. Håkansson and Snehota (1995) have recently suggested to extend this basic model by introducing activity links, actor bonds and resource ties into the model. This view is actually limiting the network perspective when conducting for example empirical studies and by reducing the theoretical base of the basic ARA model (cp. Laestadius 1995).

The network perspective to marketing implies that networks are stable as well as changing, temporally and spatially embedded socially constructed entities. Change processes can be caused by forces internal or external to the focal net, often predetermined by the researchers or the focal actors. The internal (intra-net forces) as well as the outside-network forces (extra-net related) are sources (or causes, roots) for events to come into play - or both (see fig. 1). We are aware of the problem of network boundaries defined, for example through their ‘openness’, as being tight or loose or by delimiting them by certain type of actors. The boundary problem is tackled here by using the focal-net actors of the business network denoting the “internal” network, and placing all other defineable actors as extra-network related.¹

¹ A focal net can consist of core actors in business encounters in a certain time period, for example a seller, buyer and a main distributor in industrial paper markets. All other actors (competitors, institutional actors, printing press media etc.) being, in this case, examples of external actors.
The emergence of business events

Micro and business related change

Macro perspectives:
- The "Triad" in the world economy
- Free trade development
- Capital markets
- FDI and MNC-developments
- Global sourcing and production
- Regional markets within regions

Micro:
- New management systems (BPR, JIT, KAM etc.)
- Vertical disintegration of firms
- Stiffer competition
- Outsourcing
- Relationship-orientation

FIGURE 1: The emergence of events in business networks

All kinds of "surprises", i.e. non-expected events "where common sense fails" (Casti 1994), are often the engines for change in business including business-to-business networks. The inherent characteristics of these combined forces have been hardly noted in the network approach to marketing. The critical incidents technique comes close in order to highlight temporally specific events that have caused change (Flanagan, 1954, Edvardsson & Luukkonen 1996, Hedaa, 1997).

These critical events have been mainly studied from the "insider" perspective, that is, from some core actor(s) view being a part of the network (e.g. Halinen 1994). These studies are looking more exclusively at methods in a longitudinal sense, not at theories which would be "time-driven".

The notions of process and connectedness between actors include temporality (and spatiality). In order to understand marketing phenomena in business networks one has to take this aspect into account. The use of concepts like exchange episodes, interaction processes, network
development and evolution, network change, relational contracting and exchange, denotes temporality in the applied models and theories. One might, however, quite strongly argue that deeper insights about temporality inherent in these concepts are not made very explicit by actual theoretical and empirical research. Longitudinal studies in business marketing exist already to some, albeit limited extent (see e.g. Alajoutsijärvi 1996, Halinen 1994, Liljegren 1988, Lundgren 1991, Rosson 1986, Salmi 1995, Smith & Hellman 1992, Waluszewski 1990). The temporal perspective needs to be explicated in business network research. As Pettigrew notes in his Process-Context-Content model (1985) the theories and subject area under investigation as well as the content of the study context should be in tune with each other. This means, consequently, that by using temporally laden terms the methods and theories should follow suit. The used theoretical perspectives have seldom combined all three perspectives from a temporal point of view. Here we address the question of; how to understand network theory with a temporal focus?

Relationships between actors form the basic concept for understanding networks in business-to-business contexts. Interactive relationships form the glue for networks to come into existence. Relationships emerge after a certain time-span and indicate temporality, and the role of time in order to establish, enhance, strengthen and develop relationships is crucial. Furthermore, changes and termination of relationships are also temporally embedded, i.e. they relate to other events and event structures in relationships.

The focus of the paper aims at looking more in detail into the temporal dimensions of business networks in industrial markets. First, we propose a temporal-theoretical perspective of networks in business which we define as event networks. This view stems from the fact that networks in business are related to time and space as fluidly ongoing processes existing in the past, present and future. The (i) "past-loadedness" (ii) the present based on earlier events and (iii) expectations about the future, are inherently built into business relationships. This relational understanding of time has been proposed recently as a way to approach processual analysis of interaction
between actors in business-to-business dyads (Halinen & Törnroos 1995). Here we aim at going a step further by putting events into focus. Events have been defined as; “Something that happens: occurrence” or “To happen: outcome” (Merrian Webster’s Collegiate Dictionary 1993, 401). We define an event in the following way:

an event is an outcome of acts or changes caused by nature (cp. fig 1.).

Events have two sources. One source is Man, the other is Nature. Man-made events may be intended or unintended. Nature has no intentions. Events, consequently, are outcomes of acts which are man-made or nature-based (i.e. events caused by nature are confined to a region in which it belongs, e.g. a Hurricane in Acapulco, or extensive forest fires on Kalimantan being recent examples). Man-made events can, in some cases, be global in scope. The effects of Man can be long-term as well as spatially ‘punctuated’ that is locational/regional, or global, depending on the type of event we are dealing with. Some natural phenomena are uninfluenced by Man (earthquakes, volcanic eruptions, ebb and flow etc. as well as many cyclical elements on the earth and in the cosmos). The most nature-induced cyclical effects still seem to be pure natural and stable, untouched by man. Man-Man and Man-Nature events and relations can have a global reach and are caused and enforced by human acts and event creations (global warming and the depletion of the ozone layer, for example).

Events in a business network perspective can be seen as temporally specific outcomes of performed acts by the actors. In saying this one has to take into consideration that new actors may enter into a network by performing acts and hence former actors might exit from networks. “Outsiders” may step in and “insiders” can be forced to get out or exit networks for various reasons. The reasons can be other events or self-created events. Based on the foregoing we define event based networks in the following manner:

Event networks are time based connected event relationships (see fig.2).
Event networks (EvNs) have the following characteristics:

- the smallest unit of analysis is an event dyad (two interrelated events);
- an event is always an outcome of human acts or caused by nature;
- actors (or nature) are mediators of events;
- events are always contingent on the existence of some antecedent events;
- objectively, event networks have no beginnings and no endings;
- seemingly similar events are differentiated by their position in time and space and through their loadedness;
- events may be loaded by the past or the future, and/or by the source or the effected objects (e.g. actor loaded);
- connected events are always separated by time;
- EvNs may appear as streams of interconnected events (event trajectories).

The event concept is used here as the general building block for the model, representing the basic temporal unit used in social research (Clark, 1985, Adam 1995). Events come into the triangle when noticed (perceived) by the actor(s). The other nodes in the event-network model being actors and acts.
Actors (here mainly referred to as human beings, e.g. industrial marketing managers) are the reactors on stimuli from events taking place. Cognition and sensitivity towards events evoke and selection constitute the conditions in a certain situation to act.

Acts and activities are the outcome of how actors have been able to identify events, how events have overcome the stimulus-response barriers (thresholds) and how willing an actor is to go further by action in response to the stimuli. Response to stimuli can be pro-active (creating acts and new events), reactive (following and reacting passively) or neglect, indifference (i.e. no intention to act). Acts and action are presented by Schutz (referred in Clark 1985) in the following manner:

“action is spontaneous activity towards the future in which pretentions into the future are part of memory and hence are merged with pretentions which are reflecting the ways in which attention modifies experience.”

This gives reasons for comments. We may add that experience also modifies attention. Actors are creating events and react by noting other events which can create new activities. The triggering signals (irritants) for change are caused by events. Håkansson and Johanson 1985 and Håkansson 1987, in their presentation of the ARA-model, look specifically at networks from the actors’ perspective. The same accounts for the modified and “delimited” view of Håkansson and Snehota (1995). Actors are seen as controlling resources and performing activities coupled to business. The inherent characteristics of event networks in business markets proposes theoretical, methodological and empirical extensions to the study of business networks. The event in the model forms the core perspective for understanding temporality and change in business networks. Events form the organising device to a network and its actors and their behaviour and their willingness to act and create other events. Events have different sources and take different forms as depicted in fig. 1.
3. TIME AND EVENTS

Events in networks relate to how time is incorporated into our understanding of business networks. Time can be defined in numerous ways, and it is one of the basic ontological preassumptions existing in reality (space being the other). Time, however, is a tricky term to define and even more problematic to understand coherently and explicitly in social science research, including marketing. One general definition of time is;

“A non-spatial continuum that is measured in terms of events which succeed one another from past through present to future” (Merrian Webster’s Collegiate Dictionary 1993, p. 1235).

This notion of the term falls well into a social science context and can be used to understand the event aspect of business networks in marketing. It accepts the relational time notion (i.e. noting that past, present and future modes of events as existing and embedded into each other). Additionally, it considers events as the basic units, or building blocks, of social time. Using events as a perspective to look into networks is proposed as being a fruitful way to understand what is taking place, and why, in network development and change. Through event networks one is able to theoretically explain how ‘networks work’ in different settings.

Time can also be defined as;

“The point or period when something occurs” (op.cit., p. 1235).

The definition is temporally “snapshot like”, and/ or processual in nature but it offers possibilities to relate to events as ‘surprises’. Surprises are treated as ‘the unexpected occurrences’, e.g. random propinquities, changes coming from inside or outside the focal network, turbulent and dramatic changes etc., and other critical incidents in existing context. The past loadedness of events can add insights to the importance of an event, for example history of the industry and relations and how it affects a certain
situation or context). This definition of time is not as all-embracing as the first definition. It takes on an additional meaning of time, however, which should be accounted for in understanding business marketing and the change of networks especially. The role of timing can be seen here as a way to approach this notion of time in business marketing. Timing is the “selection or the ability to select for maximum effect of the precise moment for beginning or doing something” (Merrian Webster’s Collegiate Dictionary 1993).

Time-lag takes the perspective of cause-effect dimensions looking at time as separating two connected events in a specific social setting. Reaction-time or “latent periods” are other connotations of time-lags. This can be understood by using Clarks’ notion that time-lag oriented research has “the intention to discover the ways in which effects emerge at some time after the initial intervention” (Clark 1985, 39). In event network terms the events affecting networks can materialise and become real after a time-lag from where a prior connected event has been created. Defining and understanding the “root cause” is often triggering acts.

Business networks are also influenced by time-lags because of the existence of reaction times of different kinds (delays in decision-making and deliveries of goods and information, bureaucratic hindrances, political decisions and regulations etc.). Waiting costs for network actors, caused by delayed solutions being the consequence. In business networks research this materialises, for example in the form of so called ‘black holes’ (Hedaa 1995). Black holes are found where willing and able actors cannot act because of unfavourable opportunity structures in a network.

Clark notes also that time is relative and that time should be understood as being contained in events (inspired by the thinking of Bergson and the development of quantum mechanics):

“According to the modern viewpoint time-reckoning systems are constructed by selecting various events in the form of sequences or trajectories, from arrays of events which can be apprehended relative to one another” (Clark 1985, p. 40).
In this connection Clark warns researchers to be trapped into choosing event trajectories in a pragmatic way and from the point of view of the researchers themselves. We agree on this statement, since social time and events are relational, context-bound and embedded as well as based on the actors' variations in perceptions, cognition and on their positions in the business net.

Time is characterised by many different aspects:
(based partly on Clark 1985, 41).
1. time is socially constructed and consists of intersubjectively known trajectories of events;
2. time exists through many temporal units (e.g. days, weeks, months and socially/culturally based notions of temporality) (cp. Adam 1995);
3. the passing of time is attributed to identifiable phases within temporal units (after Gurvitch 1964);
4. time frames consists of a distinctive orientation to the past/present/future, including image of the future;
5. the production and reproduction of time-reckoning elements and systems in society are embedded in practices.

Definitions should be put into context. The marketing of industrial products and services taking form through relational exchange in networks can be approached using relational time and events as the points of departure. The first starting point deals with the relational notion of time and temporality. Networks have a history, present stage of relations and future prospects (expectations about coming relationships and gains, for example). How networks have come into being, and as an existentially relevant form of relationships, can be related to both macro and 'micro' forces in society together with technological change and production systems (fig. 1). These issues have been extensively dealt with by Castells (1996) in his book "The Rise of the Network Society". This takes us directly to the other point. Events relate both to macro and supra-macro forces affecting business as well as events taking place within the network. Intra-net and extra-net forces in the competitive and the social/natural environments are the central
event “arenas” affecting and changing the network. Adaptation, trust and commitment as well as bonding mechanisms and dissolution of relations are framed around and affected by, and affecting, relational change and positioning. Adaptation, bonding and trust are factors which characterise the intranet relationships, whereas the “extranet” relations address to the needs for adapting to changes in the “informational society” and global and regionally specific networks (Castells 1996 takes predominantly, but by no means exclusively, the “outside” view in his analysis). Network-related extranet forces consist of e.g. competitors, important events taking place within the industry, new inventions in core technologies and production and marketing methods. Extranet ‘outside forces’ to the focal net address events dealing with societal change e.g. political changes, natural forces (e.g. pollution and natural disasters and hazards). Other types of regional and global changes, especially those affecting business directly or through ‘weak links’ belong to this category as well. The opening of China for business, rise of the Tigers in Asia and the formation of the New Europe in the nineties are some examples of extranet forces.

In order to come to terms with these issues we also have to develop a terminology for being able to present concepts with new meanings into business network research and methodology. The event network being one of those. Other terms relating to temporality and networks (especially denoting evolution and change) are the heteronomy-homonomy-autonomy continuum and the “existence of surprises” in business which opposes the strongly forwarded view of stability in networks (Hedaa 1997). Reality in fact is loaded with events which are characterised as unforeseeable and take the actors in a business by ‘surprise’. The way in which an event comes into play is affected by the type of environment were actors act, and deal with events.

*Heteronomous* actors are under the control of other actors (subject to external controls and inquisitions, e.g. laws and regulations, power etc). Heteros comes from the Greek meaning “other”. An heteronomous actor is subject to laws, rules and norms given by others.
Homonomous actors are acting in a situation where mutually agreed and controlled norms and laws prevail. This concept is not noted previously in economic research. The position between the two extremes (i.e. autonomy and heteronomy) falls well into the network views of marketing.

Autonomous actors are seen as those who are taking action without being externally controlled. It also means "the quality or state of being self-governing" and "existing or capable of existing independently" (Merrian Webster’s Collegiate Dictionary 1993). The terms are based on the Greek terms; "Autos" = self, and "Nomos" = laws. The terms are also used in the philosophy of Kant. Autonomy meaning 'the freedom to act'. When talking and understanding freedom the autonomy-term is useful meaning "the freedom from external authorities" (Merrian Webster’s Collegiate Dictionary, 1993, see also Hedaa 1997). In most management and economic theories the autonomous actor has been the most used as a base, at least until recently.

To sum up. Events may be used as the key to build up a more coherent theory of business markets and marketing in the form of event networks. Taking this as an ontological and epistemological standpoint theoretical models based on events in business networks can be developed. Furthermore it is argued here that these viewpoints and extensions to existing models of business networks can be used as a methodological device. In practical research one should be able to follow relationships over time and grasp event based change processes and the development of networks. The event-network approach offers a promising way to look at networks in practice, in their empirical settings. Trajectories of connected events can be seen as the key cohesive determinant for the change of business networks. We think also that this approach may be used in other contexts studying social issues through networks.
4. THE EVENT NOTION - A CONCEPTUAL ANALYSIS

The event concept can be analysed in a multitude of ways. The concept is elusive and has, as well as the time concept, many meanings. The concept has additionally many parallel and interconnected - or embedded - meanings. The attempt here is to highlight central aspects of this elusive concept into network terminology and contexts. In saying this we have come across many facets and meanings of events. It is hard to give an all-embracing view of all the important aspects of events. We have used perspectives from other social sciences, including social network research, sociology and philosophy of social science in, taking some examples, to shed some light for understanding the inherent characteristics of events.

In order to process further the event network is analysed in terms of its parts. We start by looking at the event concept through a tentative list of perspectives inherently contained in events which we use as a starting point. The list (see table 1) will then be analysed using the conceptual perspectives about events through literature research and thereafter we put our findings into specific business network contexts in order to focus on real-life business markets and marketing.

TABLE 1: The event concept - some core characteristics.

<table>
<thead>
<tr>
<th>Characteristics of Events</th>
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<tbody>
<tr>
<td>• Intensive/extensive</td>
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<tr>
<td>• Frequent/infrequent</td>
</tr>
<tr>
<td>• Present/absent</td>
</tr>
<tr>
<td>• Confirmed/disconfirmed</td>
</tr>
<tr>
<td>• Single/multiple</td>
</tr>
<tr>
<td>• Synchronic/diachronic</td>
</tr>
<tr>
<td>• Clarity/[equivocality/ambiguity]</td>
</tr>
<tr>
<td>• Overlapping/distinct</td>
</tr>
<tr>
<td>• Relational</td>
</tr>
<tr>
<td>• Direct/indirect</td>
</tr>
<tr>
<td>• Single vs. multiple (outcomes)</td>
</tr>
<tr>
<td>• Visible/invisible</td>
</tr>
<tr>
<td>• Sequential/simultaneous</td>
</tr>
</tbody>
</table>
If we take events or event dyads (i.e. how events are related to each other) through mediating variables: actors and acts, we may want to define some properties of events, before we can go further with event networks.

An event can be analyzed in terms of stimulation effects (causal factors) and in terms of outcomes or results (consequences). We shall illustrate the identified features with examples from observations of events in business markets and marketing.

**Intensive Extensive.**

Events can be intensive and particularistic, e.g., as when a critical delivery arrives late causing delays in one customer’s production and servicing of the customer’s customer. The outcome may be severe and weaken the relationship, but it is confined to this particular relationship. Intensive can also refer to the intensity of interaction between business partners in a business relationship, e.g. launching new products and services to existing customers is often intensive. Intensity come also into play within seasonal markets viz. “high” vs. “low-seasons” of demand.

Events can be extensive, e.g., when a competitor introduces a new attractive technology in the market or a new price structure affects a majority of customers. The outcome may be other suppliers’ loss of business with several customers and an acceleration of investments in R&D.

**Frequent - Infrequent**

Events can appear frequent, as when the phone-exchange has few and busy lines and consequently customers have difficulties in getting into contact with a supplier. Business interaction is more frequent and “standardised” in dealing with basic and standard products (raw materials and spare parts which are standardised, for example).

Infrequent events may be illustrated by replacement of an important boundary spanner, say a new salesman replaces the old. Large investments and project business are infrequent but complicated and involving mutually important interaction.
Present - Absent
In some dynamic markets product development and differentiation take place at an erratic speed, in other markets there have been no innovations for years. Presence of the Japanese and Korean firms were more or less unknown in the fifties and today they are present on most markets, including industrial markets as well as new entrants form Asia.

Presence of events appear as stimulants or irritants to certain actors leading them to react. But absence of events may stimulate imaginative actors to proact in order to create events in a perceived favourable opportunity structure.

Confirmed Disconfirmed
If an event is similar to earlier events they reinforce and confirm customers' perceptions and attitudes toward the supplier. Variations from earlier events disconfirm experience. Positively confirming event trajectories create reinforcing virtuous circles, whereas negatively confirming event trajectories create reinforcing vicious circles. In order to change a vicious circle into a virtuous circle takes a number of disconfirmations of negatively loaded events.

Single - Multiple
In launching new products a supplier may create a single event, like mailing a brochure to existing customers, or put together a campaign with trade- or road shows, customer education, articles in the business press, new product training for sales and service people, and so on. Here different events are noted, but reinforcing each other.

Synchronic - Diachronic
Synchronous means (i) happening, existing or arising at precisely the same time, or (ii) recurring or operating at exactly the same periods. Synchronicity is the coincidental occurrence of events that seem related but are not explained by conventional mechanisms of causality. Disparate
actors may draw from the same common pool of knowledge and scientific
discoveries and get similar innovative ideas leading to analogous events at
the same time. In the fullness of time, or situational ripeness, where new
and similar ideas, products or services are presented, for example
innovations of the same kind, can be more or less mysteriously and
simultaneously accepted by the market.

Diachronic occurrence of events characterise e.g. imitations and form an
important aspect of the problem of being a first mover or a follower in
market innovations.

Establishing programs of continuous improvements may be
predominantly synchronic, because many companies today subscribe to this
fad in management philosophy. But they are also diachronic in the sense
that such programs are inspired by early Japanese experience, and they are
diachronic in contents of a program, since a sequence of events within each
program create an event trajectory aiming at increased efficiency and
effectiveness.

*Clarity*[Equivocality - Ambiguity]*

*This dimension is mostly about how events are perceived and interpreted*
by the actors. March (1994, p. 178) posits that ‘ambiguity refers to lack of
clarity or consistency in reality, causality or intentionality. Ambiguous
situations [events] are situations [events] that cannot be coded precisely
into mutually exhaustive and exclusive categories.’ Limitations in actors’
perception of causal event nets constitutes ambiguity. Effectual event nets
constitute uncertainty (or risk if actors can assign probabilities to the
various outcomes). Ambiguity, hence, can be seen as a function of an
actor’s causal event net horizon. Weick (1979) posits the importance: ‘to
realize that an input [event] is not equivocal because it is devoid of
meanings or has confused meanings (both of these connotations are
associated with the words *ambiguity* and *uncertainty*). Instead, equivocal
inputs [events] have multiple significations. They are difficult to classify
and manage precisely because they fit numerous classifications and might
be indications of any of several states of the world.’
Equivocal events create puzzles as to what of many possibilities has caused the event. For example, it will make a difference if a late delivery is assumed to be caused by a mistake or caused by opportunistic preference of one customer over another. Notice that the cause of the event can be interpreted in more than one way, and the way cannot be compromised. If you determine one cause, you must reject the other. Ambiguous events refer to an ongoing stream of events that support several different interpretations at the same time (Weick 1995).

Overlapping - Distinct (separate)
Usually we perceive selling and servicing as two separate sets of events. That may be more true when establishing new supplier-customer relationships. When customers decide to replace old equipment the quality of service events may be more determinate for decisions than the sales effort. Service events and sales events overlap in the outcome of events. Overlapping events may also occur when two suppliers are competing for the same customer at a tender, whereas selling events may occur to competing suppliers as distinct and separate, if the first seller has closed the sale a short period before the second seller gets into contact with the customer. These events may be more or less related to each other. They are related in the sense that one event makes a difference for the occurrence of another event.

Relational
The term relational is here referring to the temporal loadedness and time as being relational in connection to the past, present and future modes of temporality. An event taking place at present is temporally connected to antecedent events. This concerns e.g. inputs from a seller in industrial markets as being historically developed through trust and commitment between a buyer and a seller. In industrial markets long-term business relationships are common. The relationship is also loaded by future expectations about business gains as a consequence of the business relationship.
Direct - Indirect
The cause of an event or the outcome of an event can be direct or mediated by intervening variables, or delayed in time. Events can be predominantly tightly or loosely coupled. Our research shows, for example, that on average a sales person needs 12 contacts over a period of 6 months to get an order in a newly established customer relationship in the market for industrial components (Hedaa 1990). The first contacts are highly indirect to the order, whereas the last encounter is directly connected to getting the order. The sequence of sales events may be interfered by other unknown events, such as words-of-mouth experience exchanged with buyers’ colleagues. Also other “weak events” can be triggering further connected relationships.

Visible - Invisible
A configuration of connected events may be so complicated that no single actor can have a total and correct picture of neither the network of involved actors nor the event network between an initiating event and the final outcome. But even in simple and linear cause-effect relationships critical events may go unnoticed because of missing feedback. Customers’ complaint behaviour discloses only a fraction of dissatisfied customers. The events leading to customer defection may be invisible to marketing people.

These facets of the event concept in industrial business are showing some features which can be detected. There exist additional meanings and perspectives in events in general and network events in particular. Further research should highlight these and also deeper insights from practice concerning the presented characteristics.

5. BUSINESS NETWORKS AS EVENT NETWORKS

How does a network in business evolve and change over time (and space)? Industrial markets have specific forces affecting them. All networks are
developed very heavily from the inside. As noted above, this concerns the mainstream of business network research.

Time can have different "paces", or intensities ongoing simultaneously causing change as well (quick and dramatic changes, cyclical developments e.g. in the form of economic cycles, product life-cycles and the like, and slowly progressing change in e.g. the production systems into which a business and its industry are embedded) (after Braudel). These ongoing changes take place as parallel ongoing processes. The nature-based, ecological changes not to be forgotten (see. fig. 1).

How can networks change and what characterises their evolution? Change and evolution should be based on understanding the event structure experienced in the past, in the present and expectations for the future in the network and its embeddedness in relation to other actors, in space/geography, in time and within its relevant context. Networks are also learning structures where continuous interaction between events and actor networks and networking takes place (see fig. 3).

The model depicts some core features coupled to the business networks theory. The model aims at showing how events emanating from inside and outside the focal net creates change and adaptation mechanisms to come into play. Furthermore, the model aims at showing the temporal embeddedness of networks forming event trajectories over time in a relational manner. Network-learning change its functions and configurations over time. It is through events that experience, trust and commitment is created as learning and unlearning processes.
How do we develop the simple model (Fig. 2) of the event network into a more complex set of actors? The “soft school within operations research” (Soft Systems Management, SSM) can give us some guidelines (Rosenhead (ed.) 1989). Eden (1989) is explicating the “Strategic Options Development and Analysis” through cognitive mapping as a “soft approach” to operations research in management. In connection to this approach one point of departure is the role of events, and how these are perceived and handled:

“So it is the interpretation of an event that is reality, rather than the perception of it. Action arises from the meaning of situations, and the meaning will vary from one individual to another even if the characteristics of the event are agreed by both individuals to be similar.” (Eden, 1989, p. 23-24.)

Checkland (1995) models an event as being affected by time-lags. The ‘lifeworld’ according to him is always in a state of flux from where perceptions and ideas emanate through interaction. Some parts of this ongoing flux over time is being perceived and evaluated, (in our terms by actors, in Checkland terms by the “system”). Some of these evaluations are then transformed into decisions to act which leads to acts and action into the “flux”. This causes time-lag between the reasons and decisions to act
(through the appearance of events, the perception of events and interpretation).

Checkland defines managing as taking place through the "continuous flux of events and ideas" (Checkland 1989, pp.78-80). These perspectives can be compared with the basic tenents of the event network model (Fig. 2) above.

6. A NOTE ON METHOD

In order to study event structures the event network should be studied over time in order to de- and reconstruct events in specific network contexts. This way the researcher maybe able to grasp the circulation of events, actors and acts. Understanding can be reached by longitudinally tracing the events affecting core actors and their reactions, and inside-out network change-mechanisms. These mechanisms have been used in order to solve problems and through which the network emerges as a socio-temporal construct.

In order to grasp the events in time and the connectedness to other events the use of contextual and longitudinal research approaches are preferable. Historical studies have the problem to overcome selective memory. Additionally second hand sources are often not available. "Follow-up" studies are preferred in order to be able to trace events and how they have come to being and how they affect the development of a network (Halinen 1994, Halinen & Törnroos 1995). Methods to study event networks should take the following points into consideration:

1. to secure the possibility to follow-up related events over time;
2. change and evolution of networks should be traced;
3. the study context should be well described in order to interpret the interdependence of events, and their connectedness;
4. to create an arena for understanding event relations (trajectories) and the embeddedness of event networks;
5. to analyse event networks through the different characteristics of events.
Combinations of alternative, longitudinal and retrospective studies taking process into account can be used (see e.g. Huber & Van de Ven 1995, Van de Ven 1992, Pettigrew 1992).

Longitudinal approaches are to be used in order to track the event-chains and trajectories of time reckoning elements in networks and their interconnectedness. These longitudinal methods are mainly qualitative in nature. Some considerations in this perspective include:

1. *understanding* change an interconnectedness instead of only measuring events;
2. the micro macro - supra-macro relations should be addressed to capture the potential "roots" causing events;
3. a long enough *time span* is recommended for being able to grasp and have an overview over a 'real process', and identify time-lags;
4. events' intensity and extensity and other temporal horizons should be accounted for as well as other *multiple properties of the event concept*

The offered perspective contend, consequently, that event networks add complexity to network research. It stresses the *temporal* interrelatedness, and taking a *holistic view* including contradictions/paradoxes and "disorder" to be (however distracting) a fact of life. In stressing this one should also note the adaptive mechanisms and that a 'way back to a new order' is often to be found. This relates to the laws of thermodynamics and chaos theory (cp. e.g. Prigione & Stengers 1988).

Perspective taken directs the research to a large extent. If we look at all events and critical events for example, or if we are interested in studying behaviours of marketing managers within a certain sector makes a big difference. If we only look at intra-net actors and their interaction, and event chains, the event network is only partially analysed.

The elusive and multi-faceted meaning of temporality including events makes the analysis of event networks a problematic area for research. Embeddeness complexity, access problems, event characteristics and the delimitation problems all prevail as stumbling stones for coherent research. The event network researcher needs a careful but well defined delimitation
of the arena for empirical observations. This can be seen as a response to the notion of requisite variety (Ashby 1956).

7. CONCLUSIONS AND IMPLICATIONS

Networks may be seen as event based structures in context. The paper indicates that event-based marketing and event network analysis in particular is a fruitful way to approach the embedded and temporal nature of business networks.

Event networks highlight one important reality of business networks and their change in context of time-space. Events are the engines for network development and are proposed to be a specific type and add to our understanding of networks. Event networks should, accordingly, be studied explicitly as a way to increase our understanding of what networks are about in business marketing contexts. This view could be useful in other human-based network studies as well. Especially how we theoretically can define networks and how we can grasp the temporality of these social constructions in business can be developed using the event-based structures and models.

REFERENCES


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