

Influencing in Logistics Networks

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Abstract

Taking its starting point in a case of an integrated logistics network, described and analysed in terms of resource interfaces, the paper contributes to the understanding of resource changes in logistics networks and how the industrial network approach can contribute to further understanding of supply chain management and logistics integration. The paper focus on how companies influence each other in order to develop efficient logistics solutions and concludes that influencing occurs as more informal, indirect and interactive than anticipated in prior mainstream literature. The paper discusses the importance of the physical/technical components in logistics networks and complement the prevailing view that it is merely 'managerial inertia' through inappropriate measures of performance and lack of common goals that inhibits the development of an integrated supply chain.

Keywords: **logistics, network, influence, adaptation, supply chain management.**

INTRODUCTION – PURPOSE AND CONCEPTUAL STARTING POINTS

Supply chain integration requires cooperation between companies because activities and resources have to be adapted to each other across organizational borders. Due to the adaptations, a change in one part often requires changes in other parts of the system, which makes influencing an important issue. This paper is about logistics networks and the influencing that takes place in order to develop integrated solutions as well as the (lack of) the ability to be influenced when changes are introduced in the same integrated solutions. By integrated solutions we mean in this paper, networks of logistics resources, in particular facilities such as railtracks, transport vehicles and packages, that are closely tied to and adapted to each other.

Most literature on influence concerns direct influence from one company and provides frameworks for classifying the degree to whether there are interdependencies between two partners in a dyad and who is more dependent on the other. The 'classification' is then used as basis for choosing an appropriate influencing strategy among a number of possibilities (see e.g. Frazier and Rody 1991, Frooman 1999), or choosing the right 'mechanism' for 'controlling' the counterpart such as in transaction cost analysis (e.g. Williamson 1985). These frameworks do not coincide well with some of the basic issues concerning influencing in the industrial network approach (see e.g. Håkansson and Johansson 1987, Ford et al 1998), because; 1) It is not a question of whether there *are* dependencies between the actors, rather how strong dependencies seem to exist and why; 2) It is not a question of choosing a strategy for influencing once and for all – influencing occurs in the interaction

between companies; 3) Influencing usually does not occur only from one party to the other. Neither does it depend only on the relationship between and the characteristics of the two counterparts. The understanding of the interaction between two parties relate to the network, not only the ‘focal’ dyad itself; 4) Influencing takes place both with basis in clear intentions as well as ‘unintentional’. Whatever one company does, it influences another or many others even if it was not the intention. Accordingly, dimensions of ‘influencing’, differentiating between ‘mainstream’ literature and the industrial network approach could be depicted as follows:

Table 1: Dimensions of influencing

Industrial network approach	Common in mainstream literature
Unintentional	Intentional
Informal	Formal
Interactive	Unilateral
Dynamic	Static
Indirect	Direct
Multilateral	Dyadic

Most studies in logistics/supply chain management (SCM) that have probed into ‘influencing’, have used the perspective common in mainstream literature with particular focus on dyadic relationships with the use of transaction cost analysis (e.g. Andersson 1997, Ellram 1991, Hobbs 1996). Looking closer at the supply chain management and logistics literature reveals that the role of influencing in chains or networks, i.e. involving more than two partners, is not much problematised. It is assumed that all a company needs to do is to find the right partners, the right goals and the right mechanisms and incentives for ‘influencing’ all parttakers into doing what is right from a ‘total’ point of view and thus avoid ‘suboptimisation’ (Lambert et al 1998). It is further claimed that compared to these

managerial/ behavioural components, the physical/technical components are easy to change (ibid.).

The paper has two main purposes. First, we want to *illustrate the importance of the physical/technical components* when it comes to the possibilities of influencing in networks, thus complementing the prevailing view that it is merely 'managerial inertia' through inappropriate measures of performance, outdated policies, asymmetric information and lack of common goals that inhibits the development of a 'collaborative supply chain' (see e.g. Stank et al 2001, Simaputang and Sridharan 2002). Second, we want to *illustrate the importance of the informal, interactive and indirect ways of influencing* in a logistics network, thus showing how the industrial network approach can contribute to further understanding and theoretical development of logistics and SCM.

The next section describes the methodology for data collection and analysis of the case. In the third section the case is presented followed by a discussion with basis in the concepts provided above. In the fifth and final section the conclusions with regards to the purpose of the paper and the implications for further research are provided.

METHODOLOGY

The paper presents one of a number of case studies conducted in 2002 at the Norwegian School of Management under the auspices of a research programme called NETLOG. The programme is based on two streams of research, logistics and industrial networks, and its

main purpose is to contribute to the understanding of how logistics resources are combined, utilised and developed. The case study method was chosen because the programme is to create an understanding of relationships and complex interactions between logistics resources by the use of real world data (Ellram, 1996, p.97). A specific theoretical framework has been developed for the empirical studies and is based on the four-entity model for description and analysis of four types of resources (business units, business relationships, facilities and products) and their resource interfaces as presented in Håkansson and Waleuszewski (2002) and further elaborated in Gadde et al (2002). All cases start out from the resource itself as the focal unit of analysis and map the network of resources connected to the focal. In order to ensure reliability in accordance with recommendations by Ellram, a case study protocol has been developed and includes a semi-structured interview guide based on the research questions. The guide was refined after pilot studies were undertaken (Ellram, 1996, p.104). A case study database was developed and includes notes from each interview, a detailed write-up of each case and other documentation.

For the particular study presented here, we look at a logistics facility – a sidetrack or 'branchline' - and how it is used in the distribution of spare parts for automobiles. It is the sidetrack that is our focal resource. In particular we describe the possible consequences of closing down the operation of the sidetrack focusing on its most important interfaces with other resources and how the adaptations in the resource network make it difficult to change. *It was during the process of writing up the case that we became particularly interested in the 'influencing' concept and the importance of the ties and adaptations between the*

facilities in the network. This is the reason why it seemed natural in this paper to start with the case and then draw on the literature in the discussion. In order to ensure construct validity, multiple data sources were used, including on-site visits and interviews with informants representing different positions in the network (e.g. companies) as well as multiple functions (e.g. logistics, transportation, ordering). In addition a number of secondary sources were used such as reports and web pages. Two colleagues within the NETLOG-programme, but not involved in this particular case, reviewed the case summary and it was also reviewed by and discussed with the informants. A pre-structured case outline was used for data analysis in accordance with recommendations suggested by Ellram (1996).

THE POSSIBLE DISSAPPEARANCE OF A LOGISTICS RESOURCE

The case takes as its focal a logistics facility – a sidetrack used for transportation of automobile spare parts from Germany to Norway. This particular sidetrack was one of many sidetracks used for transportation to specific locations in Norway. In general sidetracks are small 'appendices' connected to a large network of railtracks and as the one in question here, most of them run directly into a warehouse facility and is used only by one actor. *This case concerns a possible close down of the operation of the sidetrack and the implications for those involved and how they reacted.* The story the case unveils, tells us about the challenges that meet those who operate in logistics networks and how they by influencing each other develop integrated logistics solutions by coordinating activities and adapting to each other's resources. What concerns us is what happens when a change is

initiated in such integrated systems. Detailed descriptions of the case is provided elsewhere - see (Flygansvær 2002, Elvekrok et al 2004). In this paper we focus on the main technical and organisational interfaces between the resources in the network, starting with a description of the focal resource and the proposed change.

The focal resource and the story 'in brief'

This particular sidetrack is a 450 meters long railtrack which goes from the main track to a warehouse, approximately 20 kilometers north of Oslo. The warehouse stores spare parts for automobiles and is run by Møller Logistics (ML) – the logistics department of Harald A. Møller AS (HAM) who imports Volkswagen, Audi, Skoda and Seat from Volkswagen AG. The spare parts are loaded into rail wagons from Volkswagen's warehouse in Kassel in Germany, run by Volkswagen Transport (VWT), and taken directly via the sidetrack to the warehouse.

In 2001 CargoNet (CN), the operator of all sidetracks in Norway decides to terminate their operations and offer combined transport solutions as a replacement. According to CN the rent that is paid for the use of the sidetracks is not enough to make the operation profitable and they would rather focus on combined transport solutions in their new strategy. For VWT and ML this would mean that spare parts would be transported from Kassel on rail to Alnabru (the main hub in Norway) and then reloaded for further transport on trucks to the warehouse. The change would require rebuilding and new investments at ML's warehouse and as it had just been expanded and physically reorganised, this was not appreciated. Accordingly, VWT issues in coordination with ML a new tender for transport of spare parts

to Norway and ends up choosing a third alternative: Trucks called Jumbo LKW for transporting all the way from Kassel to Skedsmo. However, CN changes their mind and decides to continue to operate this specific sidetrack even if the others are closed down. *The question is 'why?'*. The following describes the sidetrack and its interfaces with technical and organisational resources in this particular logistics network. Then we give you the 'longer story'.

The sidetrack's interfaces with other technical resources

The location for the warehouse was chosen because of the sidetrack and has been in operation since February 1969. 100 meters of its length is inside the warehouse giving space for 7 wagons at a time. 70% in volume of all spare parts arrive on the sidetrack amounting to 600 wagons per year. Thus, the capacity of the sidetrack creates a buffer inbound stock at the unloading dock. As the warehouse was designed to fit with the sidetrack, unloading the goods is easy because of side-opened wagons with wide exposure to the storage shelves and a convenient area for sorting the goods. As the wagons can stay at the sidetrack between the changing that occurs once a day, there is extra slack with regards to shelf capacity as well as capacity in the unloading operation itself, wagons used as a storage facility during the day. The warehouse was expanded with an additional 5000 square meters in June 2001 and the facility layout was even more adapted to the sidetrack with storage space for the largest and heaviest products located nearest the sidetrack. The illustration shows the warehouse after the expansion.

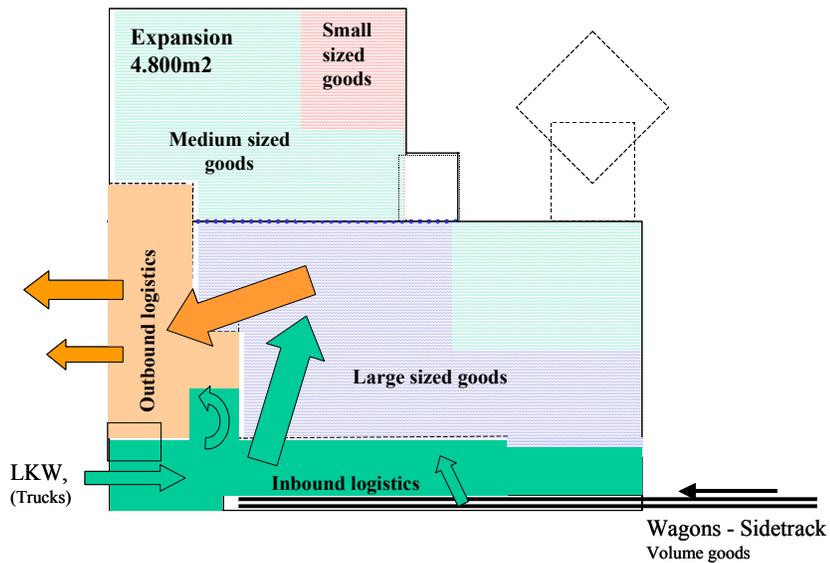


Figure 1: The warehouse after the expansion

Another important resource element in this network is the load carriers in which the goods arrive. These so called G808 baskets are used as a standard load carrier in the spare parts distribution for the Volkswagen system all over Europe and measure 150*173*132 cm, making 14 of them fitting perfectly with the capacity of one rail wagon. When the baskets are empty they are shipped back to Kassel for reuse. The storage shelves in the warehouse in Kassel as well as Skedsmo have been designed to fit with these baskets with specialized ramps for loading and unloading these types of wagons. Further, the suppliers of spare parts to the Volkswagen system have designed their production and handling operations to the use of the G808 baskets.

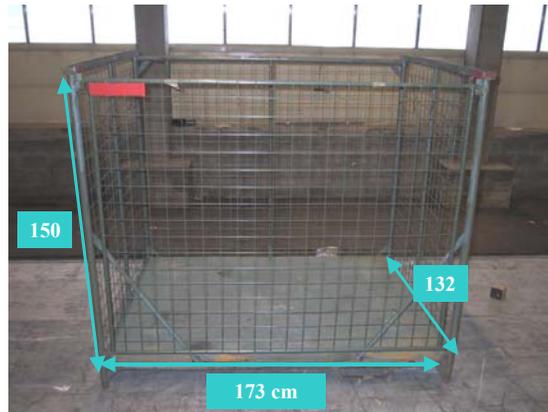


Figure 2: The G808-basket

The combination of sidetrack, basket, rail wagon and warehouse keeps loading and unloading to a minimum, thus reducing product damage and cost.

The sidetrack's interfaces with organisational resources

Goods transport on rail in Norway used to be taken care of by the state railway. When CN was established as an individual company in 2001, profitability requirements became stricter and it was decided to close down all the sidetrack operations in Norway. VWT uses rail transport for 80-90 % of the total volume of spare parts they send from Kassel to destinations all over Europe, of which merely 1-2% is sent to Norway. As VWT delivers CIF (free delivery) at the warehouse, the transportation to ML is organized between VWT and their main transport provider, Deutsche Bahn (DB) who then contracts with CN for the transport from Kassel to Lillestrøm. The sidetrack is a necessity in order for DB to provide VWT with transport to the Norwegian market.

Even if it is not ML who has a contract with CN, the relationship between the two is of importance as it coordinates and organizes the delivery of goods by the use of the sidetrack. ML and VWT have no contract relation either, but operate on the behalf of the importer and the supplier and have a common goal in finding the best solution. Even if this is not formally linked to the sidetrack solution, a separate solution for the (small) Norwegian volume is not something that seems attractive for VWT. Further, as CN is the operator of all transport on rail in Norway and DB is a large actor in central Europe, there are large transport volumes being exchanged between the parties in addition to the volume for which this particular sidetrack is used.

‘The longer story’

The case shows how technical logistics resources are combined to provide efficient logistics operations and the importance of the combinations between technical and organisational resources with regards to what actors can and will do. The main resource interfaces are illustrated in figure 3.

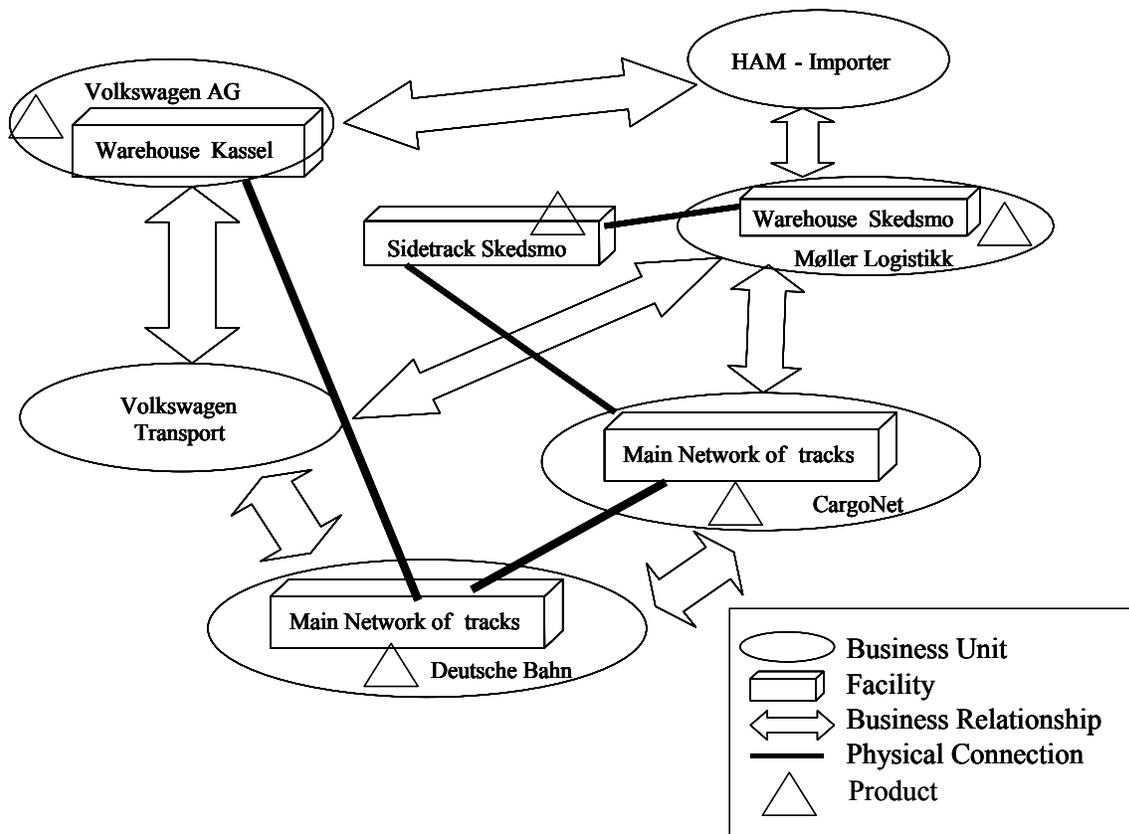


Figure 3: The important resource interfaces for the sidetrack

A change from the existing solution to a combined transport solution would have required a number of changes in the logistics operations and resources of ML and their partners. They therefore sought alternatives to the offer from CN and ended with the solution of using Jumbo LKW for direct deliveries on trucks from Kassel to Skedsmo. One of the main reasons for this choice was that it was most compatible with existing resources under the new circumstances and would keep loading/unloading underway to a minimum. Second, while a conventional rail wagon takes 14 G808 baskets, a container in the combined solution could only take 10 because the size of the baskets is not adapted to the dimensions of the container. Jumbo LKW, on the other hand, could take 20 of the baskets and therefore

had a better fit with the transport package already in use in this network. Changing the load-carriers was no option because of its adaptations with the whole Volkswagen system. A change to a combined transport solution would have required unloading rail wagons at Alnabru and load baskets into containers for truck transport to Skedsmo. However, this also seems less viable for two reasons. One was that it would result in too much traffic to Skedsmo because of the truck capacity. Another was that it would require a large working force at the warehouse because of the need to unload trucks immediately and a large number of trucks per working day. Accordingly, Jumbo LKW was simply the best offer for VWT at this point.

How did ML influence CN into reversing the decision about closing down this particular sidetrack? First of all, there is only one supplier that organizes the transportation from Germany to Norway, which made it easier for ML to communicate and discuss other options with their supplier. In another similar case, the sidetrack operation was terminated as planned (Elvekrok et al 2004). The company had as ML adapted their logistics system and their warehouse to the use of the sidetrack and was not very pleased about the change. However, they had numerous big suppliers scattered all over Europe – suppliers for whom this company was a small customer. Accordingly, they had difficulties of coordinating their suppliers into making a common effort of trying to make CN reversing the decision about terminating this particular sidetrack operation. For ML, it was much easier to get their supplier to understand the implications of determining the sidetrack operation, and in particular since it had bad implications also for the supplier itself. In the other case, the suppliers had different solutions for outbound transportation, not all connected to the use of

rail wagons. Accordingly, the degree of adaptations between the supplier's systems and rail transport were not as large as in the ML-VWT system.

The termination of the sidetrack was a local case, and Norway is just a tiny customer in a European perspective. However, as soon as CN made their decision, the European actors got in contact. ML was contacted from VWT, which had heard the news from Deutsche Bahn (DB). It seems that DB was skeptical to the possible signaling effect a change to truck transport with Jumbo LKW could have. As DB offers transport to the Volkswagen system throughout Europe, a change to Jumbo LKW for a (even tiny) part of the Volkswagen transport network meant a potential treat of replacing the railway solution with DB as the main logistics provider. Even if we do not know for sure, it seems that DB got involved and made CN change their mind because DB is one of their main customers. It was decided that the sidetrack operation was to continue in the foreseeable future.

DISCUSSION

The discussion is formed around the two main purposes of the paper with basis in the case.

The importance of physical/technical components

The case illustrates a number of challenges in logistics resource structures. First, we see the *problems, but at the same time the efficiency and the opportunities in integrated solutions.*

Over the years, ML has, together with their partners, developed an ideal integrated supply chain. The decision on building their warehouse 'around' the sidetrack in order to utilize this resource seems quite rational from their point of view. As late as in 2002 the

warehouse was redesigned and even more adapted to the sidetrack. In a world full of uncertainties, the sidetrack was viewed as one of the most stable parameters supporting this decision. On the other hand, the case illustrates how vulnerable a company becomes with such an integrated solution. We could perhaps ask how ML could take the chance of making themselves so dependent on a resource they themselves do not own. On the other hand, what would a flexible solution have cost in terms of investments? One could perhaps also ask why they did not make sure that there existed a long-term contract with CN on the continued operation of the sidetrack. However, this being the responsibility of their supplier, i.e. Volkswagen and their logistics provider, DB, it is perhaps not so surprising after all. Why did not VWT through DB make sure a long-term contract existed? Well, one can only speculate – ML is only one (and a relatively small) customer, Norway is a small (in market volume) and distant country and it was difficult for DB and VWT to anticipate the consequences of privatisation of parts of the Norwegian Rail Road Company. We can also speculate whether ML was in fact aware of the strong dependencies and adaptations that had developed since they chose their solution over 30 years ago.

What about CN – why did they not understand the extent of the problems they created for their own customers by choosing to close down the sidetrack? From their point of view the sidetrack operation was inefficient – one customer using an expensive resource only once a day. From an economic point of view also CN decision seems rational. They offered their customers a replacement which is in general is viewed as both forward and efficient – a combined transport solution. We see that this example illustrates *'alternative pictures of the reality'* - while CN has their picture of the network, ML has theirs – realities that both are

legitimate and understandable. The actors in the network *view the value* of the sidetrack very *differently*. It has a major importance for ML and their operations and efficiency because they have combined it in a very specific way with other resources in their network. For CN, on the other hand, the value of the sidetrack is almost negative – according to their calculations they lose money by continuing the operation.

The case illustrates the *importance of physical structures* depicted here as resource interfaces and adaptations. These physical structures are parts of complex networks over which it is hardly possible for any individual single actor to have an overview. This makes it sometimes difficult for an actor to foresee the implications one's own actions could potentially have for others, as we see in the case of CN's decision to close down the sidetrack. We see that *combinations of resources restrict as well as facilitate the ability to change*. Further, we see that because combinations of resources in logistics networks always involve a number of organizations, the *ability to change does not only depend on oneself, but just as much on other organizations* operating in the same network. So – given the different opinions of the value and the importance of the focal resource and the degree to which different actors depend on this resource by how they have combined it with other resources in their logistics operations, what are their *possibilities in 'persuading' each other into seeing to each other's 'realities' and acting accordingly?* In other words; how does influencing take place in logistics networks?

Influencing in logistics networks

The case illustrates that influencing in logistics networks occur even if it is not the intention of the companies that their own actions should impact on others. Acting in networks always influence others as companies are not autonomous. Accordingly, they cannot decide for themselves when, whom and how to influence - whatever they do have some consequences for the others. Companies can initiate changes but as the changes cannot be made unilaterally other actors must be influenced to participate in the change (Håkansson and Johansson 1987, p.371). According to Ford et al (1998), companies in networks must manage the expectations of others. Thus, the intentions behind the influencing that companies impose on each other might be distorted because there are unintended consequences. In particular this paper illustrates the importance of the ties between physical/technical components, i.e. resources, when it comes to unintended influencing.

The case illustrates that influencing occurs in interaction and comes in when you want others to adapt to you and when you are adapting to others: ‘Through interaction, [firms] influence and adapt to each other’s ways of performing activities (Håkansson and Johansson 1987, p. 372). The resources developed and utilized in the case are owned or controlled by a number of different organizations and requires that they influence and are influenced by each other. There is interplay between influencing others and being influenced by others in the form of action/reaction patterns. As CN suggest the change, ML responds, whereby CN responds to this and so on. Further, the reason for influencing and whether companies manage to influence their counterpart(s) relates to matters outside the

focal relationship which in this case is the relation between CN and ML. CN wants to influence ML because of the change in its strategy that is related to the stricter requirements regarding profitability, which in its turn is related to organizational changes in the Norwegian Railroad Company. ML confronts the proposed change because the new solution offered by CN fits badly with their existing physical logistics network and is able to influence CN into reversing their decision because they can use their close connections to VWT and thus the relationship between VWT and DB. Accordingly, influencing takes place through interaction, not only between the two ‘counterparts’, but also between numbers of organizations that are part of the network activated through the proposed change. This is in line with Håkansson and Johansson (1987) who claim that ‘A central element in industrial network strategies is to influence other actors not only directly, but also indirectly via other actors’ (p.376). Accordingly, no relationship can be understood only in terms of itself, but must be related to its ‘network context’ as ‘...resources developed in a relationship not only are important to those engaged in that relationship, but also may have implications for resources of parties engaged in connected relationships’ (Andersson et al 1994, p.3).

Andersson (1992) claims that ‘...the seemingly ‘non-rational’ response by an intermediary to a manufacturer’s co-ordination efforts might be due to the intermediary’s highly ‘rational’ responses to the simultaneous change efforts by a second manufacturer to which the intermediary is connected’. (p.58). This is a good description of the reason for what happened when CN decided to close down the sidetrack. It was perfectly rational from their point of view, given the change in strategy and how they valued the sidetrack as a resource.

The reason for CN to influence ML relates to CN's 'reality'; change of strategy, evaluation of their service with regards to profitability, and thus evaluation of ML as an 'unprofitable' customer. It also relates to how they value the sidetrack as a resource. CN's inability in influencing ML relates to their lack of understanding of ML's 'reality' and lack of organisational connections to other actors within their own network and to other companies in ML's network. The reason for ML to influence CN relates to ML's 'reality'; the importance and value of sidetrack as an important resource element in their logistics network of resources, and thus their logistics solution.

Our case gives a good illustration of what Ford et al (1998) have termed the first network paradox between conform and confront (p.179). Efficient logistics solutions are developed over time by the resources being adapted to each other. ML has over the years adapted to the sidetrack and the transport package by taking advantage of present opportunities.

However, the same adaptations restrict them in exploiting future opportunities when CN initiates the change, and makes them confronting this potential change. This is an example of the trade-off between adaptation and adaptability discussed by Weick (1982, p. 386).

Adaptations might restrict adaptability, and thus determine whether a company can conform to or must confront a proposed change. We see that influencing occurs because of a need to initiate changes as well as the need for keeping something stable. Whereas CN wants ML to change, ML wants CN to keep their existing solution in order to maintain stability. As Håkansson and Waluszewski (2002) claim: ... 'both the flow of forces trying to create changes in established resource interfaces and the forces trying to keep the interfaces constant seem fairly understandable' (p. 214). Accordingly, 'making the choice

between conforming and confronting requires an understanding of the evolution of both the surrounding companies and the relationships between them. Some aspects of this evolution will be positive for each company and some will be negative. Consequently each has to try to enhance the positive ones but also work against the negative ones. This is a continuous process, but it will be especially important when one of the companies tries to achieve a major change' (Ford et al 1998, p.180). As Cargonet offered their new solution and tried to influence ML into changing, they did not realise what investments ML had done in the existing solution. Accordingly, what Cargonet can do depends on ML and visa versa. And it does not only depend on ML, but also on MLs network of organisational and technical resource interfaces. What ML did relates to the point made by Andersson (1992)

...descriptions of the mechanisms by which actors in networks through *indirect* connections were able to influence other actors,...(p.55). Further, he says that '...channel actors should develop a preparedness to act on and adapt to firms breaking relationships and changing positions in marketing systems. A dealer leaving a manufacturer's distribution system might cause trouble which spreads to other parts in the system.' (p. 62). This is exactly what Deutsche Bahn might have feared as Volkswagen and ML decided to go for Jumbo LKW – what if this decision spread in the other parts of the Volkswagen system?

Accordingly, the need for and the ability of influencing relates to relationships outside the focal relationship and thus not only interdependencies between the two counterparts but also interdependencies in the network. Further, as companies have different realities they may act rational from their own perspective, but irrational from another perspective such as

their counterparts. By suggesting a change to combined transport, CN tries to influence ML, but because of earlier adaptations, ML is not adaptable to this change and CN fails to influence them.

CONCLUSIONS AND FURTHER RESEARCH

Our case has shown that influencing is not unilateral, but bilateral and interacting. Further, a proposed change does not concern only the focal relationship, but also the connected relationships, i.e. the network. Accordingly, there is direct as well as indirect influence. The case also illustrates the importance of informal influence – what seems to be the important influencing taking place in this case does not occur in the contracts, i.e. the formal arrangements among the different parties involved, but through the relationships. Finally, intentional as well as unintentional influencing has been illustrated. Our study demonstrates that influencing in logistics networks is unintentional, indirect and informal to a larger extent than anticipated in the literature. The study also demonstrates that the physical/technical components and how they are tied and adapted to each other are more important than anticipated in prior literature. It is not just the 'will' or 'ill will' of managers (or other employees for that matter) that make it difficult to develop integrated supply chains.

What would be the implications of these two main conclusions for further development of supply chain management and logistics, theoretically as well as in practice?

First, we have seen that it is the combinations of technical and organizational resources that come into play when we want to understand ‘influencing’ – the need to do it, the opportunities for doing it and what restricts it. We have seen how logistics structures and changes within them give intricate and complex games of influencing and being influenced. Is our case very specific or might it be an illustration of something of a more general nature for logistics networks? Do we believe that tightly coupled logistics resource networks will become even more important in the future, increasing companies’ interdependency, reducing the flexibility and increasing the need for ‘influencing’ (adaptations), as well as restricting, but still requiring, the possibility to be influenced (adaptability)? If that is the case, how can companies combine the need for adaptation (or integration) with the need for adaptability (or flexibility). This is a question of great interest for further research and relates to what in logistics and supply chain management has been termed as ‘leanness’ and ‘agility’ and combined into *‘leagility’*, i.e. companies that are lean and agile at the same time (Aitken et al 2002, Christopher and Towill 2002).

Second, we see that our case illustrates there are many ‘networks’ existing simultaneously, or rather, there are many ‘network pictures’ existing at the same time as ‘network boundaries are not given but *created* by actors who need them to picture and analyze situations and to make decisions’ (Gadde and Håkansson 2001). The ‘optimal’ solution – chain or network – does not exist from a ‘total point of view’ as no solution can be optimal from all companies’ viewpoint simultaneously. Whereas the existing literature in logistics/SCM focus on how to make all companies involved (as defined by the ‘focal’ actor, i.e. the starting point) agreeing on the same goals and solutions, we suggest that these

different ‘network pictures’ might be used in a more positive way – it is not always the compromises (e.g. in developing a standard package) that provide the best solution – keeping the variation and the differences even in logistics resources might also be valuable. Further research into ‘network pictures’ of the connections and adaptations between physical/technical components could provide logistics and supply chain management with valuable understanding of how to use this in a positive way. In other words, how can and how do logisticians make use of resource heterogeneity? There is need for tools that can help managers to see how the one and same resource can be used in different ways, i.e. to see ‘partial’ integrated solutions as an alternative to ‘total integration’.

Third, our paper demonstrates that it is the interfaces within two groups of technical and organizational resources respectively, as well as between them, which inhibit as well as facilitate influencing, what Uzzi (1997) calls a ‘paradox of embeddedness’: ‘the same processes by which embeddedness creates a requisite fit with the current environment can paradoxically reduce an organization’s ability to adapt’ (ibid. p.57). An interesting question for further research is whether there are differences between the organisational and the technical resources in this respect. Our paper has in particular demonstrated the importance of technical resources when it comes to being influenced and the importance of organisational resources when it comes to influencing others. However, we would suggest that it is the interplay between the two that provides particularly interesting potential for future research in industrial networks as well as in supply chain management and logistics.

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DATA SOURCES CASE STUDY

- Interview with logistics manager Møller Logistics; Kjell Korsgård – August 2001.
- Discussion with the Director of Møller Logistics, Alf Inge Andersen, August 2001 and April 2002.
- Follow up interview with logistics manager; Kjell Korsgård – April 2002.
- Some follow up questions to purchasing manager of Møller Logistics; Johnny Danielsen – April 2002.
- Site visit at the warehouse at Skedsmo.
- Site visit and interview with operator of sidetrack, Cargonet – Fall 2001.