THE 3-STEP PROCESS OF CATEGORIZING TRANSFORMATION:
USING A TYPOLOGY OF TRANSFORMATION

ABSTRACT

The purpose of this paper is an analysis of how an actor can change its position in an industrial network. The article is performed with an Industrial Network approach, focusing on the way upstream business actors in the bacalhau network link their activities to those of their customers. The case study has an exploratory stance. The data collected incorporates in-depth interviews with 45 business actors, right across the range of activities in the bacalhau (salted and dried codfish) producing system in Norway and Portugal. Actors from the cod stock regulating and controlling Norwegian authorities through to the Portuguese consumers are included in the study. The article will classify activity links between actors into weak / strong and direct / indirect, based on the typology developed by Haugnes (forthcoming). Together, the aspects constitute four Categories of Transformation. The contribution of this article is to strengthen the typology by using it, introducing the 3-step process of categorizing transformation. The article will provide new insights into how different actors can change from one Category of Transformation to another, and when and why they may do so. Put differently, the paper will discuss how the creation, alteration or elimination of activity links can be influenced, and which actors are able to do this. Pertinent theoretical and managerial issues will be raised in the discussion.

Keywords: activity links, networks, business actors, product transformation.
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INTRODUCTION

How can an actor change its position? There may be many reasons for an actor to be dissatisfied with the position it is in. It may be dominated by a competitor; it may not have capacity to handle the demand for one of its products; its market share may be decreasing; it may not like the range of products at its established suppliers; and so on. This article provides a solution, introducing a step-by-step recipe, to how to move out of the present and into a better, or the best, position.

Basically, any changes in an actor’s established activities are likely to require adjustments in other activities, and can thereby change the whole activity network, including the activities of suppliers, customers and competitors (e.g., Dubois, 1995; Håkansson and Snehota, 1989). For this reason, it is (i) important that the actors know what they are doing when changing an activity. This requires knowing the activity network very well, so as to be aware of the obvious and less obvious effects that change will have. One activity or activity link may have a huge impact, either negatively or positively, on other activities or activity links that are considered important. What that impact is, is not necessarily easy to discover. Therefore, one must be very careful when changing one’s activities. Their influence on other, what it may influence, and how that influence is interpreted by each of those involved depend on time and place (e.g., Håkansson et al., 2009). It is (ii) also important for an actor to be aware of what is going on when someone else changes their activities. This requires knowing, for the same reasons, what effects changes elsewhere in the activity network will have, and being able to cope with them.

This article takes an Industrial Network approach. The Industrial Network literature is based on the “discussion of how to articulate the phenomenon of business interaction”, viewing industrial markets as networks of connected inter-firm relationships (Håkansson et al., 2009:ix). It puts interaction at the centre by interpreting it “as a process that occurs between companies and which changes and transforms aspects of the resources and activities” (Håkansson, et al., 2009:27). This makes it impossible to make sense of what happens between business companies by looking at just one of them (Ford and Håkansson, 2006a:14), as their interaction processes would be “beyond the complete control of any individual actor” (Ford and Håkansson, 2006b:250).

Here the focus is on activities, “a sequence of acts directed towards a purpose” (Dubois, 1995:52), and their linking. In an industrial network, consisting of business actors and consumers, a general definition of their activity links “can be divided into three parts. Firstly, at least one business actor must perform an activity. Secondly, at least one consumer must perform an activity. Thirdly, at least one of these actors’ performances is affected by the activities of the other” (Haugnes, forthcoming:20). Activity linking varies in both strength and directness (Haugnes, forthcoming). When “the activity linking actors are present together in time and space, their activities can be said to link directly” (Haugnes, forthcoming:21; Haugnes, 2011). Opposite, “When the activity linking actors are not present together in time and space, and at least one intermediary is involved, the activities link indirect” (Haugnes, forthcoming:22;
Haugnes, 2011). These directly or indirectly linked activities form part of an either stronger or weaker section of an activity network. A section constitutes an area of sequential activity chains. One uniform definition of strength could, however, not be drawn from the existing literature. Haugnes (forthcoming) concluded with three initial definitions building on the current literature. The first initial definition distinguishes between the number of involved actors (e.g., Håkansson et al., 2009; Snehota, 1990), claiming that “Activity links are strong when both (all) the involved actors’ activities create influence and are adjusted. The more dominant one of the actors’ activities are through their influence, the more unbalanced the participation, the weaker the corresponding activity links” (Haugnes, forthcoming:26). The second perspective distinguishes between the number of linked activities (Håkansson et al., 2009). “Activity links can be considered strong when each of the involved actors link activities from two or more of their activity categories, while it is weak when only one or two of the actors’ activity categories are involved. Accordingly, the more activities that are linked in a chain in an industrial network, the stronger it is” (Haugnes, forthcoming:26). Thirdly, it is distinguished between the activity links’ level of integration (Johanson and Mattsson 1992; Håkansson et al., 2009; Richardson 1972; Gadde and Snehota, 2000; Gadde and Ford, 2008). “The outcome of strong activity links, unlike that of weak activity links, stands out in comparison to other actors’ comparable activity links. Strongly linked activities cannot be general, but must be specialized to some extent” (Haugnes, forthcoming:27). Together, the classifications of directness and strength constitute four Categories of Transformation (of a product), as illustrated by Figure 1.

Figure 1: Four Categories of Transformations (adapted from Haugnes, forthcoming).

Activities only stay linked as long as the aims of the business actors and the consumers are fulfilled. Consequently, changes with the purpose of establishing new activity links, or changes in the directness or strength of existing activity links, must be done with the counterpart’s activities in mind. Business actor initiated changes must have the consumers’ activities in mind. Equally, consumer initiated changes must have the business actors’ activities in mind. A change must connect with both the consumers’ purpose of use and the desire to please themselves (e.g., Kotler, 1986; Bowers et al., 1990; de Certeau, 1984) and the business actors’ purpose “for sale and profit” (Ekström et al., 2001b:28), as “[t]ransformations relate[ ] to aspects of utility” (Alderson, 1965:27) to both the linking business actors’ and consumers’ activities. Through the
complexity of areas of sequential activity chains, this article will analyze further the process of categorizing transformation, and discuss an overall definition of activity links’ strength. To structure the analysis, the numbers referred to in Figure 1 will be used. As the total amount of linked activities in an activity chain is decisive to its strength, it is used as a starting point together with the mentioned definitions of direct and indirect activity links.

METHOD

The typology of transformation was introduced as the result of a conceptual study (Haugnes, forthcoming). The goal of this study is to provide a rich and in-depth description of the 3-step process of how to use the typology, aiming at building new theory. Considering these circumstances and by asking ‘how’ an actor can change its position, a case study was chosen (Yin, 1989; 2003). The case study design is also a common design when a qualitative strategy is used within Industrial Network research (e.g., Dubois and Gadde, 2002; Dubois and Araújo, 2004; 2007; Easton, 1995; 2010).

The 3-step process was constructed through analysis of extensive in-depth interviews, observation and documents of the Norwegian-Portuguese bacalhau network. The Norwegian-Portuguese bacalhau network is here defined to include the Norwegian cod stock regulating and controlling authorities, Norwegian primary processors, Norwegian and Portuguese secondary processors, Portuguese retailers, and Portuguese consumers (for details please see Haugnes and Håkansson, forthcoming; Haugnes 2011). This network was chosen because of its great importance to both Norway and Portugal (Haugnes and Håkansson, forthcoming; Mikkelsen jr., 2006; www.seafood.no; www.noruega.org.pt), the high number of involved actors and linked activities (Haugnes, forthcoming), the consumers’ importance as actors in the transformation of bacalhau (Haugnes, forthcoming; 2011), and to avoid the danger of mistaking something quick and short-lived for something that is firmly established (Haugnes and Håkansson, forthcoming; Håkansson et al., 2009; Mennell et al., 1992; Douglas, 1982; Kurlansky, 1999; Vollan, 1956).

The interviews were semi-structured, followed an interview guide focusing on relationships and interaction, and used a simple drawing of the network as an ‘autodriver’ (McCracken, 1988; Heisley and Levy, 1991). The interviewees were managers and business owners at 45 companies in Portugal and Norway, based on the idea that they would be able to give a better overview than their employees. The interviews were conducted between October 2005 and March 2006, ranging from 30 minutes to 7 hours, with the average interview lasting 2 hours and 20 minutes. As the Norwegian-Portuguese bacalhau network is a rather closed community to outsiders, identifying the actors and arranging the interviews were, accordingly, problematic. These problems were solved by gate-keepers (e.g., Miles and Huberman, 1984) and a snowball technique (e.g., Gobo, 2004). Interpreters were used, as some of the Portuguese business actors have little or no knowledge of the English language. A major proportion of the limited number of business actors the Norwegian-Portuguese bacalhau network consists of was interviewed. Only 0.1 per cent of the Norwegian fishing vessels were included in the sample.

Not all of the approximately 7,000 (www.ssb.no, 2011a) primary producers supply Portugal, however, and in any case their activities are standardized to a great extent with little deviation. The Norwegian secondary producers who were interviewed are responsible for more than 90 per cent of the bacalhau exported to Portugal, and together with the interviewed Portuguese secondary processors account for approximately 80 per cent of the total market share. Finally, Portuguese retailers covering at least 60-70 per cent of the bacalhau market share were interviewed.
Concerning the cod stock manager and the consumers, an approximate method was used. As a result of the cod stock manager’s wide ranging and dispersed nature it was considered more efficient to research it indirectly, through those activities which are visible to the producers. The internet, laws and legislations, together with the documents given by the interviewees, represents the sources used with regard to the cod stock manager. Concerning the consumers, interviews were not performed due to the study’s limited economy and time constrains. Excluding consumer interviews required an interface, which was based on Alderson’s elements of transformation (1954; 1957; 1965; Alderson and Martin, 1965; for details please see Haugnes, 2011). Five consumer activity categories, a logical and manageable division, were derived from generic consumers’ activities classifications in the existing literature (Ekström, 2004; Wilk, 2004; Arnould et al., 2004; for details please see Haugnes, 2011). When questioning the business actors about their activities, their answers revealed a great deal about the way in which they experienced the consumers and the consumers’ activities. The business actors’ talk about how they acted upon this was used in the description of the consumers and the consumers’ activities.

During the interviews, which most of the time took place at the interviewees’ businesses, the interviewer(s) was often invited for a guided tour. Seeing how the instruments and the processing equipment were used, together with the supplementary information given on these guided tours, represent firsthand information (e.g., Silverman, 2006). The primary data was supplemented with secondary data such as information on the companies, organisations working close to them, internet, laws and legislations, and other public sources.

The interviews were not tape-recorded, as that could prevent the interviewees from relaxing and speaking as freely as they otherwise would. Instead notes were made, which were typed up immediately afterwards. This gave the advantage of opportunities to follow up on insights before the data collection was completed, in addition to drawing insights from the entire body of data (e.g., Easton, 2010; Mick and Fournier, 1998). Finally, reports were made. After the data collection, several months were spent writing up a summary of the raw data, based on the interview reports, the observations and the collected documents. This description of the activity network from the cod stock manager to the consumers became the starting point of a somewhat chaotic and unstructured analysis. It was chaotic and unstructured insofar as a solution like a computer program could not be used, as that would require a “truth table” (e.g., Drass, 1992). Activities linked together in a sequential activity chain are, however, by nature impossible to structure and simplify into a ‘truth table’ before analysing.

THE THREE STEPS

The next sections will analyze the process of categorizing transformation through three steps:

1st step: ‘Current Category of Transformation’ categorizes the current transformation.
2nd step: ‘Possible Changes to the Category of Transformation’ discusses how creation, alternation or elimination of activity links can be influenced.
3rd step: ‘Who to Make or Influence that Change’ discusses which actors are able to perform a preferred change.

The 1st step: current category of transformation
In the first step an activity’s or activities’ current Category of Transformation is mapped out. The particular business actor or consumer must take a step back and view the activity or activities in question in a broader perspective. This is not to be limited to the activities of suppliers and
customers the actor relates to on a regular basis, but also others that are (potentially) involved in the particular section of the activity network. Getting the best possible overview is important if this knowledge is to form the basis for improving the efficiency of this section of the activity network. This is achieved via a three-step process:

1) It must be uncovered which activities are linked in the transformation of a particular product. This will clarify the activity links’ strength.
2) It must be looked into which actor is performing each of these activities. This will decide the activity links’ directness.
3) It must be revealed how the resources of the involved actors are utilized in the product transformation.

The 2\textsuperscript{nd} step: possible changes to the category of transformation

The actor can thus aim to keep activities within the present Category of Transformation, or to change that category. The actor may, alternatively, decide to eliminate the activity links, or to establish activity links within a new area. Mapping out the opportunities in creating, eliminating and altering an activity link is performed through the first and the third step of the 3-step process mentioned in the previous sub-section, this time, however, based on the outline of the previous one. According to the current Industrial Network literature, it must be “determine[d] what activities are needed to create a particular outcome, such as an end product” (Håkansson et al., 2009:100). What does the actor wish to achieve? Which activities are required to achieve it? This concerns the activity links’ strength. The question of degree of linking is a question that concerns time and place across the frames of the particular section of the activity network. In other words, the degree of linking depends on whether an activity occurs in the particular section of the activity network or not.

The 3\textsuperscript{rd} step: who to make or influence that change

Mapping out who to perform or influence the change in question is made though the second and the third steps of the previous mentioned 3-step process, based on the outline of the previous sections. Who would be required to perform the activities it would take to obtain the actor’s preferred Category of Transformation? “Even if the activity [links] of an end product is more or less a given, there is a crucial issue concerning the allocation of these activities between various actors. This means that who is going to undertake the activity has to be determined, thus bringing issues related to division of labour to the forefront” (Håkansson et al., 2009:100-1). The efficiency and effectiveness of activity links depend on how the resource layers are utilized in the transformation of a product (ibid.). As this is a question of an activity links’ type, it is a question of the actors’ presence in time and place, within the frames of the particular section of the activity network.

1\textsuperscript{ST} STEP: CURRENT CATEGORY OF TRANSFORMATION

By establishing who is doing what in a selected section of the activity network of a product’s transformation, an actor becomes aware of its position and opportunities in the network. Based on the following descriptions of the four Categories of Transformation (Figure 1), an actor can work out which Category of Transformation its (or others’) linked activities belongs to. The
presentation of the four Categories of Transformation will show how they differ from each other depending on the actors' division of work.

**The 1st Category of Transformation (Direct / Weak)**
The first Category of Transformation (Figure 1, Category 1) concerns a weak section of an activity network dominated by direct activity links. An example of this is retailers cutting bacalhau at the request of the consumers. When the retailers cut the bacalhau in the standard way, they separate the thinner from the thicker parts of the bacalhau, making it easier for the consumers to prepare it (Johansen et al., 2003:35). The retailers have a band saw or equivalent, which makes it much easier for them to perform the cutting than the consumers, who do not have such equipment. This division of work saves the consumers preparation time and makes the bacalhau smaller and easier to transport and store. The retailers have the skill and equipment to perform the cutting, which the consumers are willing to pay for.

The solid arrows in Figure 2 represent the direct activity links, illustrating how the actors are present together in time and place without intermediaries while linking their activities. The total number of performed activities that link makes this a weak section of an activity network dominated by direct activity links. Defining it as weak is supported by the many consumers’ activities’ domination (e.g., Dabholkar, 1990; Fitzsimmons, 1985; Mills and Morris, 1986; Bateson, 1985). Contradicting to this, the cutting is fine-tuned in relation to the consumers’ activities (Håkansson et al., 2009; Johanson and Mattsson 1992), and a substantial economic effect of stopping the cutting activity cannot be excluded. However, performance of the activity has no “substantial economic effects on the actors involved” (Håkansson et al., 2009:33; Gadde and Snehota, 2000) as it is a general standard cutting activity performed by all retailers.

**The 2nd Category of Transformation (Indirect / Weak)**
The second Category of Transformation in Figure 1 represents a product transformation dominated by indirect activity links in a weak section of an activity network. This is exemplified
in Figure 3 by the bacalhau temperature-related activities of an average retail chain in the network. The linkage of temperature-related activities is in the interest of both the business actors and the consumers, as fish starts to deteriorate as soon as it dies. Maintaining a low temperature is essential to slow down this process of deterioration.

![Diagram of bacalhau supply chain](image)

Figure 3: Example of a weak and indirect transformation.

The retail chains control the temperature of the bacalhau upon its arrival, and that is the only directly linked (solid arrow) activity with consumers’ storing. The retail chains do not, for example, display the bacalhau at the temperature demanded by the legislation. Furthermore, the consumers are not informed about the necessary storage temperature, even though interviewees claimed that consumers storing bacalhau at the incorrect temperature is the root cause of most common complaints. If the consumers do not know what temperature to keep the bacalhau at, this “would result in mismatching” (Alderson, 1965:30). By not linking these additional activities with the consumers’ “use requirements” (Alderson, 1954:11), no utility is created. Generally speaking, unexploited activity links may jeopardise the whole activity network, as “[t]he survival and prosperity of every firm in the channel is dependent upon the success of the others” (Alderson, 1954:19).

The secondary processors print the set storage temperature on their transportation cartons. These secondary processors’ information stickers are indirectly linked (broken arrow) with consumers’ storing by recommending bacalhau storage temperature at the retailers. Some retail chains even use this rather small sticker from the secondary processors’ transportation carton in their bacalhau display. Upon arrival, the secondary processors also control the temperature of the fish and looks for potential damage caused earlier by incorrect storage temperatures. The temperature at which bacalhau must be kept at the secondary processors is regulated by the EU and implemented by Norwegian legislation, which indirectly (broken arrow) links with consumers’ storing.

Note that the directly linked activities concerning bacalhau temperature conditions vary depending on whether a retail chain or an independent supermarket is involved.
Furthermore, temperature conditions at the primary processors are regulated and indirectly link (broken arrow) with consumers’ storing. Even Gadus Morhua (North-Atlantic cod) in the sea needs a temperature just above 0°C to survive. The cod stock manager – amongst others – works to counter rising sea temperatures. The cod stock manager sets their quota restrictions by taking into account factors such as location, species, size and so on. The hunters and catchers search for fish in a way that is dependent on the quotas. All these business actors’ activities link indirectly (broken arrow) with consumers’ storing, as they keep the bacalhau at the optimal temperature conditions for its features.

When the costs of linking activities are considered greater than the benefits, the linking activities are cut to a minimum. In the current example, the retail chains do not link any more activities than absolutely necessary. Even though the other business actors only link activities of one or two activity categories each, they differ from the retailers by acting to ensure that the correct temperature conditions are maintained by their customers. Despite the relatively large number of business actors that are involved, the temperature related transformation is weak, as the actors each link only a small number of activities. With further regard to this weakness, the relevant section of the activity network is dominated by business actors’ activities that far outnumber the single consumers’ activity (e.g., Dabholkar, 1990:484; Fitzsimmons, 1985:62). The break in this area of sequential activity chains created by the retail chains sabotages these activity links’ level of integration. Figure 3 illustrates how the business actors’ indirectly linked activities dominate this weak section of the activity network relating to the temperature-related bacalhau transformation.

The 3rd Category of Transformation (Indirect / Strong)
The third Category of Transformation is dominated by indirectly, strongly linked activities. The example of indirect and strong links in Figure 4 illustrates how a product’s transformation “begins with conglomerate resources in the natural state and ends [as a] meaningful [product] in the hands of consumers” (Alderson, 1965:26). It concerns the origin of the bacalhau in an activity network involving the retail chain Pingo Doce. The fact that most of the other business actors do not specialize in bacalhau of a particular origin in this way, serves to “prepare the way” (Alderson, 1954:18) for these business actors, as “[t]he opportunity for a firm to specialize … depends on the existence of other firms” (Alderson, 1954:18).
Pingo Doce sorts the bacalhau and informs the consumers of its origin. Their supplier, the secondary processor Jangaard Export, contributes by sorting and processing the bacalhau according to its origin. Even the cod that they process is tagged with information regarding origin. Jangaard Export only accepts cod that has been caught less than 24 hours ago, landed by the coastal fleet. The time restriction and the size of the vessels provide an assurance of the cod’s origin. In addition, the involved primary processors talk with the secondary processor. This is an example of how intangible and tangible resources are used in combination, through the “parallels between the movement of goods and the flows and stocks of information” (Alderson and Martin, 1965:125). The coastal fleet hunts and catches a large volume of fish during the months of their fishing season, which is regulated by quotas set by the cod stock manager. As cod stock managers, the Norwegian and Portuguese governments have also signed a protocol to increase transparency and consequently increase the ability to trace the origin of the cod (e.g., Protocol, 2006). Traceability makes it more meaningful for the primary processors to inform their customers about the cod’s origin.

In a Category of Transformation dominated by indirect activity links, as represented by the example given above, the majority of the involved business actors’ activities link indirectly (broken arrow) with consumers’ planning, purchasing and devouring. As in the weak and indirect Category of Transformation, only the retailers’ activities link directly (solid arrow) with consumers’ activities. However, as this Category of Transformation is strong, it is characterized by the participation of a large number of business actors. The business actors and the consumers each link activities of at least two or three categories. Supporting the strength of this category, the actors are equally involved, through performing a similar amount of linked activities, and on account of none of them having a more decisive role in the product transformation than the others. The business actors seem to have identified an “exact need of the” (Czepiel, 1990:16) consumers and adapted their activities to fulfill that need, and by so doing have themselves influenced the consumers’ activities. Furthermore, concerning level of integration, these activities are “systematically and tightly linked” (Håkansson et al., 2009:33; Richardson 1972; Gadde and Snehota, 2000; Gadde and Ford, 2008).
The 4th Category of Transformation (Direct / Strong)

The fourth Category of Transformation is dominated by directly linked activities in a strong section of an activity network. The example of direct and strong links illustrated by Figure 5 is from an area of sequential activity chains involving an independent supermarket, such as Casa Oriental, cha café e chocolate (Casa Oriental). Unlike the retail chains that exemplify the second Category of Transformation, Casa Oriental informs their consumers of the necessity of correct temperature conditions, knowing that many of their consumers lack that information. By not linking their temperature condition activities with the consumers, the retail chains “increase the likelihood of the survival and success of the” (Alderson, 1954:18) independent supermarkets. The independent supermarkets advise the consumers to ensure the bacalhau remains cool during transportation to the house, and to keep the bacalhau in the refrigerator or another chilled place while storing and desalting. The information they provide links directly (solid arrow) with the consumers’ purchasing, storing, preparing and even planning. The indirectly linked activities of Casa Oriental’s network look the same as those of the retail chains’ network, which were revealed in the discussion about the second Category of Transformation.

This is a category of mainly direct activity links. The dominant business actors are the secondary processors and the retailers. This section of the activity network is strong, as the business actors and the consumers link activities of two or more of their activity categories. The division of work is balanced between the business actors and the consumers. None of them decide more than the others what the bacalhau transformation will be like. The consumers seem to have communicated “his or her problems and goals” (Czepiel, 1990:16), and the business actors link their activities accordingly. The independent supermarkets use the opportunity to specialize their activities given by the retail chains’ non-specialized activities (Alderson, 1954). Even all the three initial definitions of strength point in the direction of strong, the linked activities could have been stronger, with at least the cod stock manager and the primary processors being involved in more activities. However, that strengthening would bring along a change in the Category of Transformation, which is the subject of the section below.

![Figure 5: Example of a strong and direct transformation.](image-url)
2nd STEP: POSSIBLE CHANGES TO THE CATEGORY OF TRANSFORMATION

When an actor has defined its Category of Transformation, the next question is; Which of the four Categories of Transformation would it prefer to be in? Probably one in which the activity links’ benefits are “more substantial than the costs” (Gadde and Håkansson, 2006:180). Each of the business actors and consumers has a number of optional links and changes they can make to their activities. It might be a wish to strengthen the activity links to make them more stable and solid through including more indirectly linked activities. Alternatively, an actor might want to weaken the activity links or even remove them through phasing out both directly and indirectly linked activities. Moreover, perhaps an actor wishes to establish new, though weak, activity links in the hope of strengthening them one way or another. Similarly, the consumers may wish to change the Category of Transformation in order to secure their preferred use. Whether their potential for improving is obvious or not, it could be both interesting and wise to map them out. Actually, all actors of an activity network should map out and consider possible changes as a continuous process. Only by knowing its activity network and its own position in it, and through actively participating in shaping demand, can a business actor take responsibility for its own situation and secure its future. When the most visible changes have been made, there will still be a continuing number of minor changes that can be made to increase efficiency. This section will discuss possible changes between the four Categories of Transformation.

Changing from the 1st Category of Transformation

The first Category of Transformation involves ‘direct, weak’ activity links. The example of cutting from the previous section is used to illustrate a change from the first Category of Transformation to the second, and subsequently on to the third.

The retailers have invested in cutting equipment which enables them to cut the bacalhau much more quickly and easily than the consumers can. This has not always been the situation. In previous years, the consumers carried out this preparing activity themselves. The movement of this activity from the consumers to the retailers represents the creation of a weak and direct-dominated activity link from what was, until recently, a non-existing activity link.

Furthermore, a growing number of secondary processors cut and pack their bacalhau. The cutting activity is now moving further on from the retailers to the secondary processors. Such a change would be an alteration from the dominance of direct activity links to the dominance of indirect activity links. This change of Category of Transformation is happening gradually because the secondary processors consider the “benefits from [linking this activity to be] more substantial than the costs” (Gadde and Håkansson, 2006:180). In addition, the consumers’ “past behaviour provides [the secondary processors] with reason to expect that” (Richardson, 1972:886) their activities would link.

Despite the fact that the cutting activity is moving between different business actors, the activity linking remains weak, as no additional directly or indirectly linked activities or actors are added nor the level of integration increased. It is only a single linked activity moving between different business actors and as a result changing from a direct to an indirect link. One way to strengthen these indirect and weak activity links would be to undertake additional supporting activities such as, for example, sorting loins and tails / wings into separate bags. This would create additional indirect links between secondary processors’ processing and sorting, and consumers’ preparing, purchasing and storing, and represent a specialization. The second arrow
in Figure 6 illustrates such a change from indirect-dominated and weakly linked activities (2), to indirect-dominated and strongly linked activities (3).

Figure 6: Changing from the 1st Category of Transformation.

In the future, the number of linked cutting related activities could increase. On the other hand the activity link could disappear, if the consumers were to start performing the cutting themselves again. Alternatively, the whole cutting activity, or parts of it, might keep moving between the different business actors.

Changing from the 3rd Category of Transformation
The third Category of Transformation is ‘strong, indirect’. The origin / Pingo Doce example is used in this sub-section to show how strong activity links do not appear to be easily swayed – a consequence of the business actors’ and the consumers’ equal involvement.

The bacalhau origin example refers to the link between a secondary processor (Jangaard Export) informing and consumers’ purchasing as being indirect, because the origin information is printed, rather than having an employee at the retailer’s premises to communicate the same information to the consumers face-to-face. It is an information tag and not a human being that is present in time and place with the consumers. That said, the degree of directness of linking and physical presence can vary. The question is whether a tag can be used to create a ‘direct-like’ link, as happens, for example, when consumers use self-service ATM machines (Bateson, 1985). If the consumers feel that their aims have been fulfilled in the same way as if the secondary processor had been present with them in time and place, then utility is created and their activities link directly. However, Jangaard Export cannot achieve that change from an indirect to direct Category of Transformation with their tag, as it is printed with Pingo Doce’s private brand.

This possible change of Category of Transformation is, of course, not limited to the activities of the secondary processors. “[T]he success [of Pingo Doce’s and Jangaard Export’s tagging] creates opportunity for others” (Alderson, 1954:21). For instance, at the present time ‘Bacalhau da Noruega’ (Norwegian bacalhau) is not sub-divided into geographical regions. One possibility is for a group of vessels in the coastal fleet to get together and tag their cod with ‘Fresh from Lofoten’ or similar. Alternatively, the fishermen’s sales organizations that control all landed cod entering the bacalhau industry could certify it with a tag stating ‘Caught by
Norwegians in Norwegian waters’. Even the cod stock manager could participate in this potential change of Category of Transformation by way of its own information activities. This could also help to counter IUU-fishing (illegal, unreported or unregulated; www.fisheries.no, 2006b). For instance, the cod stock manager could certify the cod with a tag that includes, for example, the national coat of arms, the identification number of the quota and a text about how the cod is caught in a way that is naturally sustainable. Tagging the cod in this way could then be linked to the secondary processors’ activities to ensure that the tags survive the salting and drying procedure. If made, such a change could create direct links, not only between secondary processors informing and consumers purchasing, but also between primary processors informing and consumers purchasing, and cod stock managing and consumers’ purchasing. In Figure 7 the arrow represents this potential change from indirect-dominated and strongly linked activities (3), to direct-dominated and strongly linked activities (4).

**Figure 7:** Changing from the 3\textsuperscript{rd} Category of Transformation.

**Changing from the 2\textsuperscript{nd} Category of Transformation**

The bacalhau temperature conditions in the network of a retail chain are an example of the second Category of Transformation, while those in the network of an independent supermarket are an example of the fourth Category of Transformation. One possible change is for an average retail chain to change from the second to the fourth Category of Transformation (see Figure 8). The retail chains could instigate this change by altering their temperature related activity links to match those in the network of an independent supermarket such as Casa Oriental. This presupposes that the retail chains would consider the “benefits from [those activity links to be] more substantial than the costs” (Gadde and Håkansson, 2006:180). The difference in the activities of the retail chains is the only disparity between the two networks; the indirectly linked activities of the two networks are the same. The difference is limited to direct activity links, as Casa Oriental informs their customers about bacalhau temperature conditions by talking with them face-to-face.
DIRECTNESS OF ACTIVITY LINK

<table>
<thead>
<tr>
<th>Direct</th>
<th>Indirect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weak</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Strong</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
</tbody>
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Figure 8: Changing from the 2\textsuperscript{nd} Category of Transformation.

**Changing from the 4\textsuperscript{th} Category of Transformation**

Figure 5 mapped out temperature-related activities in the network of an independent supermarket like Casa Oriental, to which one possible change would be to reverse the changes suggested in the example of the previous sub-section. By cutting their directly linked activities, the transformation would change from the fourth to the second Category. This elimination of activity links could for example be forced by a worsening financial situation or due to Casa Oriental joining a retail chain. However, as mentioned, strong activity links do not seem to be easily swayed because of the business actors’ and the consumers’ equal involvement.

There are also possibilities to further strengthen a selected section of an activity network, even when the actors concerned are already very involved, with two or more specialized activities each. More directly linked activities could be added to the already direct-dominated and strongly linked activities. For example, there are no directly linked activities between business actors and consumers other than those between the retailer and the consumers. Casa Oriental could use this as an opportunity to involve a supplier, whether a wholesaler or a secondary processor. Together they could, for example, arrange theme evenings. These might be evenings that individual consumers could attend and/or they might be an offer to consumers looking for a special, private arrangement. Upon arrival the consumers would be given a vivid presentation on a set subject such as, for example, the importance of correct temperature conditions. The participants might be given the opportunity to look at and smell pieces of bacalhau that had previously been stored at the wrong temperature for various lengths of time. The session could conclude with a specially made bacalhau meal, served together with a wine recommended by a sommelier.

A third alternative would be to strengthen the activity links by adding more indirectly linked activities. For example, the existing tagging by secondary processors could be used to advantage. The secondary processors could become further involved by adding information about the recommended temperature conditions to the tag, and highlighting the importance of keeping to this. As a large proportion of the indirectly linked activities in this particular activity network are due to legislation and government food safety concerns, they are unlikely to be removed in the near future. The business actors therefore have the option of taking advantage of these set activity links to become further involved. In Figure 9 the arrow represents these
potential changes in the Category of Transformation from strong and direct-dominated activity links (4), to strong and indirect-dominated activity links (3).

<table>
<thead>
<tr>
<th>DIRECTNESS OF ACTIVITY LINK</th>
<th>STRENGTH OF ACTIVITY LINK</th>
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<tbody>
<tr>
<td>Direct</td>
<td>Weak</td>
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<tr>
<td>Indirect</td>
<td>Weak</td>
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<td></td>
<td>Strong</td>
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Figure 9: Changing from the 4th Category of Transformation.

3RD STEP: WHO TO MAKE OR INFLUENCE THAT CHANGE

The ease of changing between indirect and direct linking, weak and strong linking, and from or to linking activities in general, depends on the current Category of Transformation and which other is influencing the change. Therefore, after looking at what changes can be made, it is of interest to know which other is best placed to perform or influence the preferred change.

Consumers

Consumers, as actors in the industrial network (e.g., Haugnes, 2011; forthcoming; Sörhammar, 2008; Hadjikhani and Bengtson, 2006), can change a Category of Transformation through their activities. This is especially so in weak sections of activity networks, whether dominated by directly or indirectly linked activities, in which the involved consumers’ activities are the controlling influence by outnumbering the business actors’ activities (e.g., Dabholkar, 1990:484). In comparison to the business actors, the consumers are far more numerous but do not necessarily have an organization to unite or represent them in issues related to changing Categories of Transformation. However, because of their numbers, the consumers can also influence the weakening or elimination of an existing strong Category of Transformation. The consumers can influence such a change when many or all of them raise the same request to the business actors. The consumers’ primary aim in doing so would be to ease their use or increase their self-pleasing through a change in the division of work. That would also be the situation with regard to the category’s directness. For instance, the advantage of changing from an indirect to a direct activity link is the opportunities that would result from the consumers’ and the retailers’ presence together in time and place.

The cutting of bacalhau (Figure 2) is an illustration of how a business actors’ activity can be influenced by consumers’ activities, and as a result adapts the product to the “process in which it will be used as a input” (Dubois, 1995:55). It is much more efficient for the network if the retailers perform this activity rather than the consumers. As business actors, the retailers are in a far better position to buy and use the best cutting equipment, and to know how to make the cuts.
in the standard way. The consumers, on the other hand, cutting the bacalhau manually, might struggle to perform this job in the correct way. At the present there is even a change from predominantly direct activity links to predominantly indirect activity links, as a growing number of secondary processors cut and pack the bacalhau. This further change of category means that the consumers no longer have to queue up and wait at the retailers for the cutting to be performed.

Retailers
Retailers’ activities can be influenced by consumers’ activities in order to adapt the product to the “process in which it will be used as a input” (Dubois, 1995:55). The retailers are the business actors who are most often present together with the consumers in time and place. Therefore, the retailers are most likely to perform changes to weak sections of activity networks dominated by directly linked activities, in which retailer activities are the controlling influence by outnumbering the consumers’ activities (e.g., Dabholkar, 1990:484).

Broadly, the retailers can be divided into two groups: retail chains and independent supermarkets, which affects their ability to change Category of Transformation. The size of their market share and their contact with the consumers puts the retail chains in a powerful position. This enables them to change even strong Categories of Transformation, despite the fact that they and the consumers are equally involved (e.g., Czepiel, 1990). Thus with regard to being influenced by consumers’ activities, the retail chains can both make and prevent category changes by refusing to take part in activity links. An example of the latter concerns the bacalhau storage temperature conditions, the section of the activity network of which the retail chains at some point changed from strong (Figure 5) to weak (Figure 3), by declining to participate in certain activity links. Interviewees claimed that the consumers’ lack of knowledge of the required temperature conditions is the main cause of consumers’ complaints. Even so, the retail chains neither display the bacalhau at the appropriate temperature nor actively inform the consumers about the correct way to store it.

Secondary Processors
Secondary processors’ activities are influenced by retailers’ or consumers’ activities to adapt the product to the “process in which it will be used as a input” (Dubois, 1995:55) and / or by primary processors’ or cod stock manager’s activities to adapt “in order to use input products” (Dubois, 1995:55). The secondary processors are most likely to perform changes in weak activity networks dominated by directly or indirectly linked activities, in which secondary processors’ activities are the controlling influence by outnumbering the consumers’ activities (e.g., Dabholkar, 1990:484; Figure 3).

A change in Category of Transformation can also be a change in the balance of power between the actors of the network. The Portuguese retail chains are powerful, with their 80 per cent market share and physical contact with the consumers. Spot processors and smaller volume processors have gone bankrupt or left the network among other things as a result of the retail chains’ exerting their power. However, 50 to 60 per cent of the 70,000 tonnes of bacalhau annually imported to Portugal comes from Norway (Mikkelsen jr., 2006:32), and the three largest Norwegian volume processors control 90 per cent of this. Furthermore, the largest Portuguese volume processor accounts for almost twice as much as any one of these three (Costa, undated). With four secondary processors controlling 70 to 80 per cent of the bacalhau market, they should be in position to make changes in strong as well as weak sections of their activity networks. For
instance, they should be able to influence change in the activities of retail chains in the above-mentioned example of the bacalhau storage temperature.

The individual tagging of the bacalhau is an example of a category change performed by secondary processors, which might be influenced by consumers’ activities. For instance, the tagging by Jangaard Export and Pingo Doce has increased annual sales by 10 to 15 per cent. Using a tag can change the indirect activity links to direct activity links between the informing secondary processors and the purchasing consumers. As previously mentioned, the tag might become a substitute on a par with the business actors’ physical presence with the consumers in time and place and create a similar feeling of relationship and helpfulness, which again would shift the power balance between the retailers and the secondary processors. For instance, the activity link of bacalhau storage conditions could be strengthened by the secondary processors printing the recommended temperature on the tag to highlight the importance of storing at the correct temperature. This is also an example of how the secondary processors could use the tag to take advantage of the opportunity inherent in the legislation the government has imposed upon them. The legislations already oblige them to link their activities indirectly with consumers’ activities, so why not inform the consumers directly at the same time.

An interesting factor of the secondary processors’ ability to change Category of Transformation concerns the Norwegian Seafood Export Council (EFF). EFF undertakes a broad spectrum of worldwide marketing activities on behalf of the Norwegian secondary processors. To finance this, Norwegian exporters are charged 1.05 per cent of the F.O.B.-value in tax. By comparison, the Portuguese secondary processors are free to spend their marketing budget on joint campaigns with their main retailer customers. The retailers demand their suppliers’ economic participation in these marketing activities, regardless of whether they pay EFF-tax or not. As a result of their already tight profit margin, this economic burden hinders the Norwegian secondary processors from performing certain changes of Category of Transformation, regardless of whether consumers’ activities influence them to do so or not.

For example, a growing number of secondary processors carry out the bacalhau cutting, but taking over this activity from the retailers involves new processing costs. Likewise, joining in directly linked activities such as co-arranging themed evenings with retailer customers, necessarily involves extra costs. Considering that the few Norwegian secondary processors are very large, they would have been able to participate in these category-changing activities had it not been for their marketing budgets now being spent in a manner beyond their control. However, there are also advantages to EFF and employer’s association of secondary processors based on voluntary membership like the Norwegian Seafood Federation (FHL) and Associação dos Industriais do Bacalhau (AIB) such as, for example, their ability to lobby politicians, negotiate international business agreements and fund research about the bacalhau consumers. Nonetheless, the fact that EFF’s activities limit the Norwegian secondary processors’ opportunities to compete through changing Categories of Transformation does not seem to be compensated for by the possibilities they create.

**Primary Processors**

This section does not distinguish between the primary processors and the primary processors as hunters and catchers, which is done in Figures 2 until 5. This is due to this presentation’s general
character and that the hunters and catchers, when it comes to their ability to change activities, are not in a very different position to the primary processors in general.

Primary processors’ activities are influenced by secondary processors’, retailers’ or consumers’ activities to adapt the product. This is in addition to any influence on their activities arising from their own initiatives. The primary processors are most likely to perform changes in weak activity networks dominated by indirectly linked activities, in which primary processors’ activities are the controlling influence and outnumber the consumers’ activities (e.g., Dabholkar, 1990:484). A large proportion of the indirectly linked activities of the primary processors have arisen because of legislation. For instance, where and how to catch, and when and why the cod is bled out. Just as for the secondary processors, these activities present an opportunity to be used and taken advantage of by developing them further, rather than ignoring or being indifferent to them.

Moreover, the primary processors can look to further use their position in the network and the opportunities that the unifying sales organizations present. For example, it may be possible for them to increase their profits by carrying out some or all of the bacalhau cutting. Would it be most efficient to deliver the whole cod to a single customer, or to deliver cod loins to one, and cod tails and wings to another?

The primary processors can be divided into the sea fleet and the coastal fleet. Neither has clear opportunities regarding category change. If one primary processor wanted to change the Category of Transformation, it alone would not necessarily have the power to do so, as it may not be in control of or manage a weak section of the activity network. However, all first-hand trade of fish in Norway is arranged or controlled by one of the fishermen’s registered sale organizations (Law of raw fish trading, 1951:§2 part 1). The fact that a far greater number of consumers believe they are buying bacalhau of Norwegian origin than is actually the case (Haugnes and Håkansson, forthcoming; Mikkelsen jr., 2006:32), has given the fishermen’s sales organizations a job to do. What they could do is help changing the Category of Transformation by coordinating the primary processors’ activities. Even strong sections of activity networks may be changed through collective behaviour, including that of the primary processors.

**Cod Stock Manager**

The Norwegian government controls and regulates “one of the few remaining cod stocks in a reasonably good condition” (www.fisheries.no, 2007a). Consequently, their purpose of “sale and profit” (Ekström et al., 2001b:28) differs to a large extent from that of the other business actors. They regulate the fishing through quotas, on which the whole Norwegian-Portuguese bacalhau network bases their activities. Through quota changes based on location, time, fishing gear, species, size, volume and so on, the cod stock manager is in position to change all the Categories of Transformation.

An example of a category change performed by the cod stock manager, which is at least partly influenced by consumers’ activities, concerns the approximately 20 per cent of the final catch (Ot.prp. nr.98 (2005-2006):no. 2.1) that is IUU (www.fisheries.no, 2006b). In aiming to prevent IUU fishing, the Norwegian government seeks to work with countries where the IUU catch is potentially landed. Another weapon that could be used against IUU fishing would be for the cod stock manager to certify the cod with a tag. The tag could, for example, include the national coat of arms, the identification number of the quota and a statement to the effect that the cod has been caught as part of a naturally sustainable quota. Such tagging could influence change of Category of Transformations, as well as helping to avoid consumers’ confusion about what really constitutes ‘Bacalhau da Noruega’ (Haugnes and Håkansson, forthcoming).
CONCLUDING REMARKS

Networks consist of strong and weak sections of sequential activity chains, which consist of activities that are either directly or indirectly linked. These differing aspects create the four Categories of Transformation (Figure 1; Haugnes, forthcoming). This article has suggested and illuminated a three-step process to make use of the opportunities this typology of activity links presents.

The first step of the transformation process is for the actor to understand the link or links in which a particular activity is currently involved. The examples of Category three and four showed how the creation of a strong section in an activity network seems to stand out, being achieved through complementing and specialising. It is also characterized by the equal division of work between business actors and consumers. Neither the involved business actors nor consumers participate more than the other. In a strong section of an activity network, the involved business actors and consumers link activities of two or more of their activity categories. Thereby, this is an illustration of the concurrence of the three initial definitions of ‘strong’. As far as ‘weak’ sections of activity networks are concerned, Category one gave an illustration of few actors, each involved with few and standardised activities, in a transformation dominated by directly linked activities. In contrast, Category two gave an illustration of many actors, each participating with few activities, in a product transformation dominated by indirectly linked activities. Furthermore, the area of sequential activity chains illustrating Category two is characterized by a break caused by one of the business actors. The two ‘weak’ examples illustrate plainness and minimalized or not fully exploited areas of sequential activity chains, where the business actors and the consumers link activities of only one or two activity categories each. Furthermore, it is characterized by the domination of either the business actors’ or the consumers’ activities. Thereby, the illustration shows how the three initial definitions of ‘weak’ concur.

The second step of the transformation process is for the actor to understand how to use the latent opportunities in a particular activity to make changes, establishing and strengthening or weakening and eliminating areas of sequential activity links. The discussion of the second step made some addition to the definition of strength. Firstly, as far as strong activity links are concerned, the analysis illustrated how the actors’ equal and highly integrated involvement appears to make influencing changes less easy. The exception is when business actors or consumers act collectively. By doing so they might become sufficiently dominant to change a strong Category of Transformation. Secondly, weak activity links seem to be plain and minimalized or not fully exploited, and thereby much easier to dissolve. As far as the consumers and the retailers are concerned, they can change weak and direct activity links, in which their activities are the controlling influence and outnumber those of their counterpart. The consumers and the remaining business actors can change weak and indirect activity links. This discussion did, however, illustrate how some weak activity links are special as they are founded on national and international legislation and regulations. Having said that, in the example of bacalhau temperature condition activities, the risk of quality reduction and deterioration appears to worry the retail chains more than any legislative issues. Changes are harder to make to strong activity links, so when they are made, they make an impact. When many actors, each with many activities, which are highly integrated, choose to ‘get stuck’ in an area of sequential activity chains, it is because doing so has advantages. As an already strong section of the activity network grows stronger and stronger, it becomes harder and harder for outsiders to influence a
change or to join in. However, at a certain point, when the involved actors and activities have
become numerous enough and integrated enough, the specialist nature of the particular section of
the activity network will become the ordinary. It will not be special any more, as it has become
dominating and commonplace. The bubble having burst, new specializations and
complementation are established within the area of activity links, which has developed into being
the whole activity network. At that point, the previously weak activity links may become a new
strong activity section, being no longer general or most common. Of course that does, however,
depend on what that area of sequential activity links actually does perform. It may be of such
little interest that it just vanishes, or stays as an agreeable alternative to those becoming the new
strong activity sections. The discussion of the second step also added to the definition of direct
activity linking through the analysis of ‘direct-like’ activity links. If the business actors’ and
consumers’ activities link indirectly, but at least one of the parties experience their aim to be
fulfilled and utility to be created as if they had been present together in time and place, their
activities link directly or more precisely, in a direct-like way. Such linking was exemplified by
consumers’ self-service at ATM machines and the provision of information on printed tags. The
discussion has illustrated chain reactions of activity networks, but chain reactions are not
necessarily in the nature of activity networks. Firstly, activities that are neither directly nor
indirectly linked will not adjust. They are part of a different activity network, or at least a
different section of the activity network in question. Secondly, changes in weak activity links
may not change the whole activity network. The change’s domino-effect may be limited to the
dominating actors’ activities, and have no bearing on the other party to which the activity link(s)
in question may be of almost no importance. There are, however, exceptions that can be
imagined, such as the famous story of the flapping butterfly’s wings in China causing a storm in
the Barents Sea. Maybe the difference between chain reactions caused by strong activity links
and those caused by weak activity links, is in the length of time it takes before their consequences
show? This knowledge of how to change categories can also be used to make forecasts that
analyse potential consequences of alternative scenarios or preferred changes. Likewise, such
knowledge can be used when looking back at past behaviour. For instance, the ability to analyse
various products’ transformations, activity links and changes of categories, makes it easier to
understand and complete historical statistics.

What activities (at least in the case of ‘strong’ activities), which actors, and how they can
be utilized cannot be decided by one actor in isolation. It requires the involvement of all the
business actors and consumers that are linking activities in that section of the activity network at
the time of the change. Firstly, the actor who wants the change must question what can be done
to its own activities to influence that change. Only those already participating in the selected
section of the activity network can make a change to it, including both the involved business
actors and consumers. Consequently, the actors that are able to influence or perform a change
will vary with the area in question. Secondly, the actor wishing for a change must question what
the other actors of the selected section of the activity network can do to their activities to bring
about that change. The other actors may be motivated by very different and even contradictory
purposes, but the way in which the activity-linking business actors and consumers can support
each other in the change of category is of central importance. It must be considered whether their
potential new utility would be equal to, greater than or less than what they currently have, as
actors may not be willing to contribute to the change of category unless it would lead to increased
utility for them. In order for them to contribute to a change of category, it must be expected that
the counterparts would also like the costs of changing to be less than the advantages they gain
from it. There may be situations where a third party - an actor not currently involved - has an
interest in influencing a particular change. In that case it will have to negotiate, ask or put pressure on one or all of those involved to make that change. It may, however, transpire that a particular involved actor is impossible to influence. In such cases, there might be an option to influence someone else, a fourth party (who may also be uninvolved in the section of activity network), to influence the one that needs to be swayed to get the change performed. If the change involves enough money and is of a big enough interest to the party, the chain of who, to influence who, to influence etc. in order to get the right actor (who is in the position to make the change) to actually make that change, can be very long. The process of obtaining a preferred network position may have to be performed stepwise over a long period of time.

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