

The embeddedness of selfish routinesⁱ: how routines are replicated in business networks

By

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INTRODUCTION

The notion of routines as a powerful metaphor for explaining organisational capabilities and the evolution of discretionary organisations has been widely accepted as a central issue in evolutionary economics (e.g., Dosi, 1999) as well as in the management literature (e.g., Winter, 1987; Foss, 1999; Nelson, 1991). Routines are normally seen as productive competences involving repetitive patterns of activities which are based on routine-specific investments in human and physical capital (Winter, 1990). So far, however, routines have chiefly been seen as distinct features of organisations. The prevailing idea is that routines are retained and inherited in some form of formal organisation. Essentially, organisational memory is limited to routines as organisations remember by doing (Nelson & Winter, 1982). Even though this idea intuitively holds explanatory power beyond the boundaries of the organisation, few attempts have been made to address the issue of routines from an inter-organisational or network perspective although references to the concept are occasionally made in the inter-organisational literature (e.g., Dubois & Gadde, 2000; Delmestri, 1998). The argument presented in this paper is that routines may also be embedded in a network context and that they provide key insights for our understanding of (a) important differences in the development of new business ventures and (b) the dissemination and exchange of knowledge among network actors. Routines are “selfish” in the sense that they may exist beyond the life span of an organisation and that formal organisations may sometimes be seen as nothing but one of several institutional carriers of routines.

The configuration and management of routines across organisational, and ownership, boundaries involves a range of specific managerial and strategic issues which are not addressed in the current literature on routines, in which ownership and the corresponding authority of management are not included. Instead, routines are seen as being interlinked only in a negotiated environment of business actors.

Below follows an overview of the routine concept as well as an argument for applying the routine concept in a network embeddedness context. Next, two case

studies are presented, covering examples from the Danish dairy and the Danish machinery industry. Finally, the paper discusses the prevalent managerial and strategic issues found in the case studies.

ROUTINES, ORGANISATIONS AND NETWORK EMBEDDEDNESS

The central idea of the routine concept as put forward by Nelson & Winter (1982) is that firms select, memorise and operate according to a set of routines. A routine may be defined as a patterned sequence of learned behaviour involving multiple actors who are linked by relations of communication and/or authority (Cohen & Bacdayan, 1994).

Routines exist at various levels in organisations and combine into a configuration of the performance of all the individual members, which constitutes the productive performance as well as the inertia of the organisation (Nelson & Winter, 1982). Repositories of routines endow firms with an opportunity and the capacity to transform input into productive performance. At the same time, routines hamper the ability to respond to changes and restrict learning to that of new ideas consistent with existing knowledge. Hence, compared to neoclassical conceptions of the firm, which attribute no importance to distinct firm differences, the evolutionary approach contributes much to including the unique dispositions of firms, which provide them with unique properties (Nelson, 1991).

Individual routines combine to become collective responses, which may be further configured, selected or otherwise linked to various other forms of routines. In this form, routines allow us to describe the capabilities of the firm. Firms may be understood in terms of a hierarchy of the organisational routines exercised which define and coordinate low-order organisational skills and higher-order decision procedures (Nelson, 1991).

An important aspect of the routine concept concerns the way in which a web of interlinked routines has gradually developed over the years to form a trajectory that the organisation has difficulties departing from but finds it relatively easy to replicate in some form. In this sense, organisational history influences decision-makers' ability to interpret sensory data and collect appropriate responses (Walsh & Ungson, 1991).

For individual actors, the system of routines in which they can engage signals a pattern of predictability in which actors have invested through their development of

skills (Norus, 1999). Each employee handles uncertainty in interpreting the acts of others. The uncertainty involved relates to the cognitive abilities and limitations of human beings. Put differently, all workers have biographies which reflect their experience, idiosyncrasies and distinct forms of knowledge (Storper & Saias, 1997). It follows that patterned sequences of learned behaviour, i.e., routines, are formed through social practice and that they are most likely to emerge in connection with the making of some specific output such as a product. Hence, the involvement of new actors in existing routines is highly dependent on coordinated reciprocity (Weick, 1979).

An individual who wants to enter and interact efficiently in routine scripts has to develop a past or have roots in common with those who are already part of the scripts – where being part of the script means having intimate knowledge of one’s own vantage points and understanding those of others and their forms of behaviour. Hence, individual actors may find it easier to provide valuable input consistent with the system of routines in which they reside than to contribute to one to which they are “outsiders”: in the latter case, new schemes of signalling and responding have to be learned whereas, in the former, practices interlocked in established social networks provide a viable path to follow. Particular competences are necessary in order to identify the role of expectations within particular job situations. This means that, to individual workers, learning new routines represents an investment in skills which influences their future employability. In this sense, workers are distinguishable from other production factors as pointed out by Marshal as early as in 1890².

The process of transferring routines to new members in organisations is not one that was really developed in Nelson & Winter’s original contribution, which addresses the firm from an economic perspective rather than from a managerial point of view. However, it is reasonable to assume that a functionalist approach to learning and socialisation underpins their work in being consistent with their overall perspective and use of the mass-producing firm as a role model and with their acknowledgment of “the behavioural theory of the firm-tradition” (Nelson, 1991). From the functionalist point of view, the dissemination of work-related knowledge is usually referred to as a

² “It matters nothing to the seller of bricks, whether they are to be used in building a palace or a sewer, but it matters a great deal to the seller of labour, who undertakes to perform a task of given difficulty, whether or not the place in which it is to be done is a pleasant and wholesome place and whether his associates will be such he cares to have...” (cf. Marshall, 1890, vol. 6, ch. 6, p. 560)

vertical information flow process by which workers receive information and training from their superiors through formal or informal training programmes.

In the field of organisational learning, there is increasing awareness, however, of learning processes of a more lateral and socio-contextual nature, where learning involves participation in a community of practitioners in which newcomers, prior to attaining the mastery of a bundle of skills necessary to be accepted in a group of peers, have to pursue an apprenticeship process (Lace & Wenger, 1991). From this perspective, learning is not regarded as a special practice which needs to be decontextualised and implemented through formal programmes; instead, it is seen as being inevitably involved in the mundane everyday aspects of working place interaction.

Basically, the learning of routines by individual actors and the ways in which the actors comply with the sets of corresponding routines performed by other actors may therefore be enforced chiefly through a mixture of two channels: organisational training and incentives and peer-based relationships.

Firstly, organisations may provide training and incentive structures for eliciting a specified pattern of behaviour. In such cases, the socialising mechanisms of the mass-producing organisation play a central role, conforming to the portrait painted by Nelson & Winter (1982). According to this (functionalist) viewpoint, the organisation imposes “the routine’s order”. As the ability to comply with routine expectations serves as a target for measuring and controlling individual performance, individual members have to learn the system of coordinated messages and add these fragments of knowledge to their existing repertoire of skills.

The first picture neatly fits the organisational image, which involves job tasks being narrowly specified and assigned to individual members, which is supposedly a prevalent aspect of American business – or was, at least at the time when the routine concept was proposed (Dertouzos, Lester & Sulow, 1989). Fast food chains, for instance, often operate with standard scripts designed to reduce training costs and training time. Individuals perform a small fragment of the routines which in combination constitute the assembly line leading to the production of the desired outcome. This organisational image corresponds much to the organisational portrait found in the behavioural theory of the firm (Cyert & March, 1963).

This type of organisation, however, resembles only a fragment of organisational variation, one which has existed for more than a century but has attracted much

attention in recent decades (Piore & Sabel, 1984). Together with advances in information technology and flexible production methods, new conceptions of organisational forms have emerged which differ radically from the Fordist picture of mass production (Lewin & Volderba, 1999). These forms are organisations characterised by a higher degree of lateral coordination, by internal as well as external networking and the permeability of organisational boundaries to include coordinative patterns involving buyers, suppliers and other organisations. The employees have been given work responsibilities which were previously in the hands of line managers or support staff, a process referred to as empowerment (Andrews & Herschel, 1996, Disko, 1997). Self-organisation and improvisation are the prevailing patterns of coordination, which may rely strongly on the existence and development of peer relationships and social networks. Rather than seeing routines as endorsed by organisational fiat, we may choose to see individuals making decisions and performing activities consistent with their situated rationality (Karnø & Nygaard, 1999).

Secondly, peer relationships formed laterally between individuals provide a mechanism for learning compliance with the ruling procedures for coordination (Weick, 1979). A mutual equivalence structure by which team performance relies on reciprocal and mutual adjustment of behaviour is a second channel for enforcing and preserving collective routines. This pattern of self-organising routines is found in organisations relying strongly on the skills of individual craftsmen and professionals, where patterns for engaging in productive routines may be shared among a collective of craftsmen organised in a specific socio-economic context (Kristensen, 1999, Granovetter, 1992). Vocational training and craft's apprenticeships are commonly referred to in this way. In terms of social ordering, actors construct their actions individually and relate them to the existing web of interrelations, understanding that the system consists of their own and others' interconnected actions (Weick & Roberts, 1993). Processes of self-organising may involve actors inside or outside the organisational perimeter. Social networks, expanding multiple workshops, geographical boundaries and career paths are increasingly common and are all important for the understanding of the formation of routines from which organisations benefit. Below, the nature of network-embedded routines is further developed

Network-Embedded Routines

In social interaction, rules and norms emerge which have properties similar to those of routines in terms of producing concerted individual action in order to attain organisational performance. Rules are common-sense constructs or webs of signification shared by a range of individuals who belong to a specific socio-cognitive society such as a profession (Kallinikos, 1986; Koppl & Langlois, 1994). One particular subgroup of such routines may be labelled business recipes because they embody a specific logic which allows productive performance to be linked to market exchange activities (Whitley, 1992).

The proposition made here is that organisations may be seen as one of several potential repositories which may maintain routines. The notion of organisations as sets of interlocking routines provides a viable route for linking individual and collective learning. Like the major part of the organisational learning literature, this perspective, however, ignores alternative institutional arrangements as carriers of interpersonal routines (Araujo, 1998). Interpersonal routines do not respect the organisational perimeter by default. Moreover, organisations may benefit from the inclusion of their members in different sets of routines since shared patterns of recognition and configurations of collective actions may prove valuable to actors beyond the organisations in which they originated. This notion is close to the idea of embeddedness, which sees patterns of inter-personal coordination as being interlinked in broader social structures and partly governed by the entrenched and ongoing contextualisation of exchange systems which may be noticed in the emergence of norm systems and of regularities in conduct (Granovetter, 1985). Besides, these structures embody a history of their own and are evoked by repeated interaction – a notion which obviously has much in common with the idea that organisations “remember by doing” as was suggested by Nelson & Winter (1982). Finally, the embeddedness concept also holds clues as to how the constituting forces of social contexts are to be understood, for instance, in terms of the potential formats of new business ventures (Dacin, Ventresca & Beal, 1999). The concept of embeddedness has been applied to business networks theorising – as contexts or spheres of influence which simultaneously restrict and guide social action (Gulati, 1998). In sum, networks may display various forms of embeddedness: technological, spatial, political and cultural or temporal (Halinen & Tornross, 1998, Dacin, Vencestra & Beal, 1999).

ROUTINES AS SELFISH GENES

Apart from the acknowledgment of the embedded nature of social action, there has been little research, however, on how these forces channel co-aligned action patterns among firms, but the notion of inter-organisational routines may provide a powerful vehicle for investigating this. Much like selfish genes (Dawkins, 1989), which are known from biological research as genes which use the human or animal body as a carrier of their features, routines may assume an identity of their own, shape business activities and transgress various regulatory forms, including networks, hierarchies and markets. Taken to its extreme, this means that an organisation is nothing but the product of a loose federation of co-occurring warring routines. The notion of genes is closely linked to the routine concept. Routines, like genes, carry with them the essential organisational predispositions which channel their evolution but also limit their ability to change. Even though the biological metaphor may be, and sometimes is, taken too far into the realms of social science (Morgan, 1986), it may, in the present context, provide a useful framework for conceptualising the enduring nature of routines, which persists even beyond the boundaries of the organisation. Therefore, the following section provides two studies of network routines in action which relate to two aspects of routine regeneration, one of which concerns the replication of routines across organisational contexts. Arguably, the business context of a firm may provide an assortment of routines which – in combination – may form a business enterprise, or an organisation. In this sense, routines create organisations as a way of replicating themselves. Similarly, it may be argued, following insights from biology, that routines, like genes, may support the survival or growth of economic forms as a way of supporting their own existence. This resembles what genetic research sometimes refers to as reciprocal altruism (Dawkins, 1989).

The following section presents two case studies from Danish industry: one from the machinery industry and one from the dairy industry. The case studies both address the idea of routines being embodied in a network context and transgressing organisational boundaries and that of the network context offering fertile ground for creating this coalition. It may reasonably be expected that such contextualisation is an important distinguishing factor as concerns diverging patterns of business ventures in different business contexts (Burg & Kenney, 2000; Johansson, Karlsson & Westin, 1994).

Where the first case study focuses largely on the organisation of manufacturing, the second centres on inter-firm routines for obtaining, ordering and disseminating knowledge. Besides stressing the point of routines being the generator of economic activities, the latter case study serves the purpose of contributing to the discussion of the managerial implications of developing fertile ground for utilising the benefits of network-embedded routines, which appears in the concluding part of the paper.

TWO CASE STUDIES OF SELFISH ROUTINES

Data and method

Following the guidelines for case studies developed by Yin (1994), the case studies below were developed through interviews and the collection of various sources of archival data. The interviews concerning the dairy industry were conducted in 1993-1995 and those on the machinery industry in 1995-2000. The interviews were with key informants, usually managers or other important actors with experiential and/or expert knowledge of the area. All field interviews were semi-structured ones. The length of the interviews varied considerably: from 30 minutes to four hours. The interviews were all transcribed and a summary of the key points submitted to all informants for their information and to allow them to add any comments or information. Twelve persons were interviewed: eight for the dairy industry case study and four for that from the machinery industry. In some cases, more than one interview was made with the same informant. The total interview transcripts cover more than 500 pages of text. In addition, secondary data in the form of newspaper articles, internal memoranda and other accounts of each industry were used in order to portray the industries. The case studies have been presented elsewhere in different forms (Andersen, 1995; Anderson et al, 1998, Andersen, 2000). For present purposes, however, the underlying data was reassessed in order to bring to the fore empirical illustrations which deepen the current understanding of the social practices of network-embedded routines.

COTAS COMPUTER TECHNOLOGY

Background information

CCT is an advanced subcontracting firm in the electro-mechanical and apparatus industry, encompassing a wide range of industrial branches. In these branches of industry, the accelerating pace of technological change often forces a wide range of producers constantly to renew their product lines.

In 1979, three engineers who had decided to leave DTI, a consultancy firm, formed the company in order to start a development and manufacturing enterprise based on their current knowledge of EC technology and the industry including their existing customer relationships. Their business activities included the manufacturing and development of electronic control systems tailored to meet specific customers' needs, which quickly became their major business area. More than 50 per cent of the operating costs stem from R&D.

Spotting the opportunity for knowledge transmission through inter-firm partnerships: the case of a routine-generating organisation

Based on their consultancy experience from serving customers in the machine industry, the founding engineers had realised that from a technical consulting perspective, customers, even in diverse industrial settings, often faced similar problems. Clients faced the similar generic task of aligning sensor responses with machinery, which could be solved by means of electronic processor controls. The problem is well known in cybernetic theory: how may signals obtained from an external environment be transformed into information useful for some automated response. Regardless of whether the issue was obtaining wind force information and relating this to the control of blade angles on wind turbines or measuring the temperature of frozen food in order to have the optimum freezing sequence in food processing, a fair number of the components in such solutions would be the same. Moreover, whatever knowledge was gained in one case could quickly be implemented in other solutions. Hence, spotting and taking over this activity for clients could yield economies of scope.

"Our business philosophy is that we should concentrate on the development of PLCs and release resources internally for the firm to work

on its core skills [...]. Because of our focus, we cultivate technological disciplines that none of our customers would be able to take up and which they may not know about...this is our advantage. This idea has proven valid, especially in recent years. The costs of software and hardware are so extensive that no single firm in Denmark can capitalise its investments in this equipment."

[Ole Riis Hansen, Cotas]

Gaining access was a problem, however. As the activity was regarded as critical to the performance of the customers' products, it was often not possible to take over the design of the systems. Moreover, electronic control systems are often an integral part of product design. Unlike what is the case in modular designs, standard interfaces, therefore, are not obtainable. Experience from their work as consultants had taught the engineers that customers often used consultants at a fairly late stage of their product design, which meant that optimal solutions were not always applicable. EC systems often involve the fundamental product architecture, which is partly given at the late stages of product development. In order to reach the full potential of the idea of knowledge sharing between customers, CCT, therefore, had to find a way of associating with the internal product design teams at a fairly early stage of product development. This was basically an incentive problem, which CCT solved by giving its ideas away for free on a "no-cure-no-pay" basis. Customers allowing CCT access to the early project planning stages of a new product design do not have to pay the development costs involved but are only charged on the basis of the control devices which they subsequently buy from CCT. In other words, CCT acts as a risk-sharer and has direct interests in the commercial success of the product developed, which has further convinced customers of the loyalty of CCT.

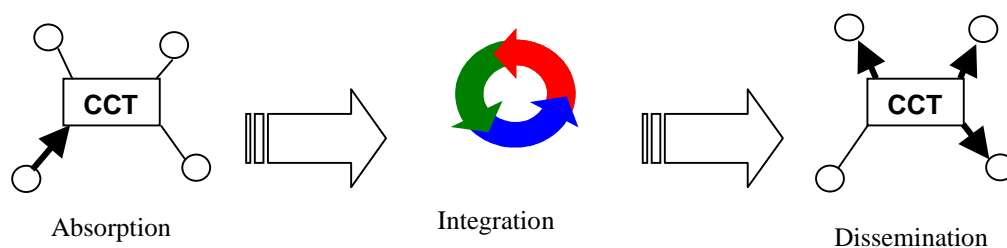
We start a new customer relationship by assessing, from the perspective of our existing customer portfolio, whether this customer is interesting for us. Next, we conduct an analysis - which is free to the customer - and present a sketch including a price estimate, presenting the potential novel features of the product.

[Søren Jakobsen, Sales Engineer, Cotas]

Routines for coordinating processes of knowledge transmission at CCT

If the literature on product development is paraphrased, the knowledge processing activities of a knowledge transmitter involve three generic steps (Von Hippel, 1994). These steps concern (i) the absorption of ideas, (ii) the integration of them into an existing knowledge base (memorising), and (iii) their further distribution into other relations (dissemination). Figure 1 illustrates these steps.

FIGURE 1: THE GENERIC STEPS OF THE KNOWLEDGE TRANSMISSION ROUTINE



Absorption

CCT's first customer on the “no-cure-no-pay” partnership basis was Vestas Wind Energy. Personal trust between engineers at Vestas and the founders of CCT undoubtedly played a central role in convincing the partners that they should join this unusual setup and later, when CCT could refer to Vestas as a company for which it had solved control problems, this paved the way for the development of partnerships with other customers. Soon CCT realised, however, that, in its close cooperation with customers, allowing similar development needs to adjoin each other had to be carefully balanced against any critical spillover of knowledge among competitors. Therefore, CCT developed a strategy which involved having no more than one partner in each industrial branch and carefully controlling any possible clash of interests among its customers in the market place. As its customer portfolio increased, CCT reinforced its position as a central node in a knowledge-sharing network. It became a transmitter of knowledge on electronic control systems between firms with adjoining and complementary learning interests. The portfolio represents diverse industrial branches such as packaging, wind turbine production, textile processing and industrial cleaning machinery. CCT has developed routines for managing its role in the product planning process and now has routine procedures for its involvement in product development. CCT has, for instance, built extensive meeting facilities in order to take

over some of the product development meetings from its clients and run them as in-house meetings. CCT has found this to be an important tool in convincing partners of the partnership nature of the business arrangement and helping to blur the mental boundaries between CCT and its partners.

Integration

In order to cope with the growing array of technological knowledge and facilitate access to company knowledge, CCT very quickly introduced a policy of documentation on standard modules. For each new project, any new developments had to be documented and related to existing modules. Bits of programs from systems for sensing possible wind turbine overload stemming from wind force may, for instance, be used to record environmental information on overload from cold store sorting systems in retail chain warehouses. This allows the gradual growth of a component architecture and means that the problems which firms face may increasingly be solved with existing components. In addition, the development of a library and the constant addition to this following simple formulas for documentation and possible applications facilitated this form of knowledge sharing considerably and may be seen as a strategy of knowledge codification. Moreover, all client meetings are handled by at least two engineers from CCT. This ensures that, if an engineer should decide to leave CCT, then some continuity and flexibility in terms of a collective organisational memory will continue to exist. Other organisational memory bins include written memoranda, customer files and even videotaped meetings. In some cases, the memory bins are even shared with customers via web hotels and other devices for smooth knowledge sharing and virtual teamwork.

Dissemination

Utilising and sharing knowledge embodied in existing designs for solving new problems follows from the modularisation and codification scheme addressed in the previous section. CCT has no patents or other forms of legal protection covering the components developed. To CCT, this is not necessary as their knowledge is constantly reformed and renewed through the ongoing customer interaction.

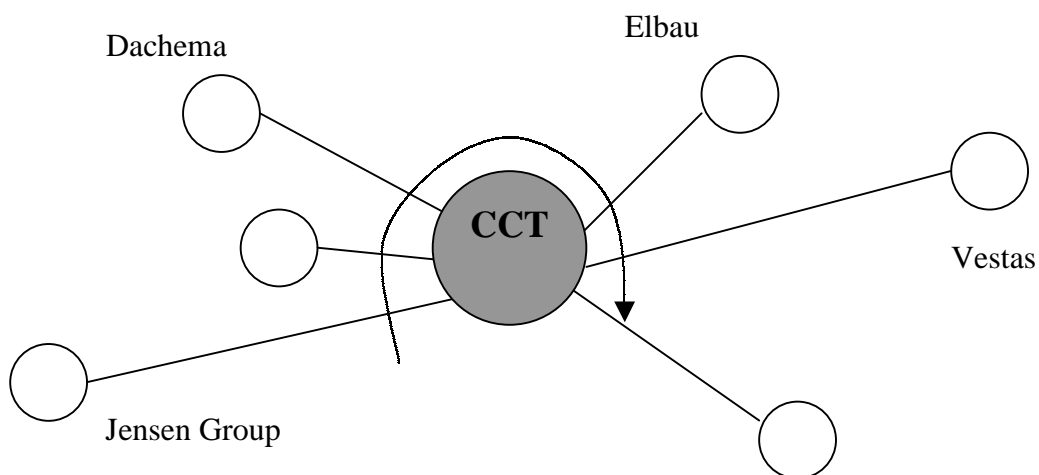
In the EC industry, the average lifetime of a new technology is counted in months. We find the retentive approach of protecting knowledge more costly and

less appealing than ensuring that we are always at the forefront of technological development.

[Ole Riis Hansen, Managing Director, CCT]

Thus, CCT sees its core capability as the mastering of this storage and of the flows of knowledge into and out of the company through its network relationships rather than as protecting any core of knowledge through patent rights, etc. This also means that customers have access to most of the CCT component library through extranet facilities. Figure 2 depicts the current network of CCT.

FIGURE 2: THE FOCAL NETWORK OF CCT



As more customers join the CCT network on a partnership basis, the scope for sharing development costs increases, thus decreasing the no-cure-no-pay risk run by CCT. At the same time, this enhances the overall value for other partners, the addition of new clients increasing the likelihood that the partners will be able to benefit from new ideas transferred by an increasingly competent supplier. In some cases, CCT acts not only as a translator of possible needs into technical wants, but may also use its current knowledge of control systems from complementary industries to develop ideas on control features which are new to the customer. The Cotas management clearly

holds the view that it is in its best interest constantly to update its clients on new technologies as this helps justify its price policy and raise capital for new equipment.

When we develop something for our customers, our interests do not always match theirs. Sometimes our customers find these development projects unnecessary and would rather prefer a general cut in our prices for providing our components. Typically our argument is that we pay for the development and they only pay by missing the opportunity to cut costs. On the other hand, for those costs they receive an updated product which, hopefully, will contribute positively to their market position and turnover.

[Ole Riis Hansen, Cotas]

NORDEX FOOD

The business context of Danish dairies: a brief overview

The Danish dairy sector is probably one of the most highly organised in the world. Over the years, a number of organisations have grown up to serve the dairy producers and, taken as a whole, they form an institutional environment of specialised skills and commonly agreed norms and standards on which any activity in the industry is directly or indirectly based. This tightly regulated area has been able to develop and maintain high-quality milk production as well as the world's most efficient dairy farms. The system is supported by research on and development of dairy cattle breeding programs and by tight control of farming principles, through education, inspection, and advisory services.

The actors constitute an interconnected field of exchange relationships in which research results and other types of innovation developed in one relationship are quickly distributed to other actors. Seen as a whole, the actors may be viewed as a range of competences on which producers may draw and the configuration of which may be adapted to a variety of activities. The domination of Danish producers in the international feta cheese market may be regarded as an example of this.

The background, development and present status of Nordex Food A/S: a case of routines forming new organisations

The story of Nordex Food begins with Ørum dairy, an innovative dairy which developed the ultra-filtration method for cheese production and specialised in the production of feta cheese.

The success of Ørum Gruppen (the Ørum group) in the late 1970s enabled it to offer better milk prices to the dairy farmers affiliated with it than was offered by the cooperatively owned dairies. This resulted in painful questions being asked by dairy farmers at the large cooperatively owned dairies. The dairy farmers affiliated with MD Foods demanded to know why the substantial and expensive rationalisation and centralisation process was necessary if medium-sized producers such as Ørum Gruppen were able to make better profits and pay their dairy farmers more. Eventually, MD Foods acquired Ørum Gruppen in 1984. The dairies controlled by Ørum Gruppen were closed down and the delivery contracts with the independent farmers were transferred to Akafa, a large feta cheese dairy controlled by MD Foods.

The takeover came as a surprise to the management at Ørum Gruppen, who had previously seen themselves as the flagship of the private dairy sector. Similarly, the customers of Ørum Gruppen were afraid that the dominant position of MD Foods would favour their already active intermediaries and that the takeover would lead to an industrial shake-out. On the basis of the supportive environment at Ørum Gruppen, a group of four former employees decided, together with a Lebanese cheese importer, to start on their own: in 1984 they formed Nordex Food.

Initially, the idea was to be an internationally oriented trading company selling a broad range of dairy and meat products in the Middle Eastern market through the contacts and relations built by Ørum Gruppen. At about the same time as Nordex Food started, there was a dairy production capacity surplus due to the rationalisation efforts of the cooperatively owned groups. Nordjydske Mejeriselskaber (Nordjyske dairies), which was in the process of buying Nørager dairy, offered a share in it to the newly started Nordex Food. Both parties saw that they had an interest in cooperation because of their complementary skills: Nordex Food had experience in international sales while Nordjydske Mejeriselskaber had production knowledge and access to a substantial amount of milk. Therefore, Nordex Food and Nordjydske Mejeriselskaber ran Nørager dairy as a joint venture based on a contract which specified that, if one of them closed down, the other could take over the dairy in its entirety.

Owing to the lucrative Middle East market, the firm grew rapidly during the first years of its existence and began hiring former Ørum Gruppen staff. In addition, dairy technicians were employed as quality and product development managers. Several skilled technicians and dairy engineers who had worked in other dairies which had been acquired and closed down were also hired.

In 1989, MD Foods acquired Nordjydske Mejeriselskaber and, soon after the takeover, MD Foods announced that it wanted to continue the joint venture with Nordex Food. Nordex Food declined, however, and took over Nørager dairy in accordance with the contract signed with Nordjydske Mejeriselskaber.

Organisation of exports – the development and routinisation of relations with export intermediaries

In 1985, Nordex Food began to look for international business opportunities. In Europe, a major part of the feta cheese consumers are immigrants from the Middle East and Mediterranean countries. Germany has between two and three million Turkish immigrants, one million in the Ruhr District alone. More than two per cent of the Dutch population is of Turkish origin but, although Turks form the single largest ethnic group of emigrants, the total number of immigrants of Middle Eastern origin in Europe is much larger.

In the Middle Eastern kitchen, feta cheese is an important ingredient, which – in the immigrant countries – is chiefly sold through the “ethnic” specialty stores which have appeared in the wake of the immigrants. These ethnic shops are interconnected through a network of family and kinship ties stretching across regional as well as national borders. These retailers create their own business communities, in which competition and cooperation go hand in hand. Many wholesalers are both importers and retailers of the products offered. Imported products are distributed to other wholesalers who cooperate in purchasing and transportation arrangements. At the local level, such as in the large cities, trade is organised as large fairs (*Grossmärkte*) where Turkish and other ethnic retailers and wholesalers meet weekly to socialise, exchange information and do business.

In 1986, Nordex Food exhibited an assortment of feta cheese at the Anuga food fair in Cologne. A Turkish wholesaler contacted them and offered to help them develop cheeses tailored to the ethnic Turkish market. Jørgen Ugilt (JU), the managing director of Nordex Food, gratefully accepted and the following months saw a hectic round of telephone and telex-based communication between the Turkish wholesaler, the product development manager and JU on various aspects of the marketing of feta cheese such as slicing, packaging, tastes, consistency, etc.

Nordex Food gradually became convinced that its product could meet the needs of Turkish wholesalers better than could that of its competitors. It therefore decided to develop a more systematic distribution network of wholesalers to cover countries heavily populated by Middle Eastern immigrants. As a result, JU began travelling around Europe to locate and evaluate potential wholesalers, eventually establishing more than 75 business relations. Through the initial dealings, JU learned that business according to Turkish tradition is largely conducted in a social context with specific rules of etiquette. The parties to business deals conclude them together at social occasions, e.g., coffee drinking, family visits, or business chats.

"This is how business is conducted in the Middle East. They like to talk and call on customers and have coffee. Our business conversations involve a number of social affairs, too... Business affairs are not tightly scheduled as we are used to. I never know what will happen [when I call on] a customer, or when I can proceed to the next customer. Therefore, I also always plan everything a bit loosely during business visits."

[Jørgen Ugilt]

Contracts are not customary with ethnic wholesalers. This does not mean, however, that, once it has been established, it is easy to enter or leave a business relation. In these contexts, reputation plays a major role. News travels fast in this highly interconnected network of wholesalers, and opportunistic behaviour becomes known almost instantly. The conventions and social structures of the ethnic groups form an entry barrier which is hard to penetrate. The information network, family and kinship ties, and the business traditions and methods of ethnic dealers make it difficult for an outsider to gain acceptance and become a trusted business partner. Insiders, however, are supported by the Turkish society of wholesalers, which also provides members with valuable information and with a medium for marketing communication. JU discovered this when Turkish wholesalers began contacting him after his first sales to the Turkish wholesaler whom he had met at the Anuga fair.

"The wholesalers came shortly after the beginning [i.e., after this initial sale] and there the transparent nature of the segment is obvious. Other Turkish wholesalers from different parts of Germany, and even from Austria and the Netherlands, phoned to know whether they could have a sample of the product and perhaps market the product as well."

[Jørgen Ugilt]

In general, wholesalers have confidence in JU and treat him as a member of the community, which means that he is expected to listen as well as to provide information and participate in social activities. JU is also immediately informed if there are problems or if customers are dissatisfied. This information keeps him up to date with the distributors and he is often able to handle problems or exploit opportunities immediately; and because he acts on this information, JU has earned the reputation of being a reliable business partner who respects their traditions and is genuinely interested in their affairs.

The information and personal contacts are also used for other purposes. In addition to using bank information and his personal impression from visits to the businesses of

potential new wholesalers, JU uses his relations to existing wholesalers for the purpose of finding and evaluating new ones in other parts of Europe. The relationships always develop gradually. Normally, they begin with the shipment of a single pallet of cheese and then continue from there. The largest wholesalers buy truckloads on a weekly basis. Trust between the partners developed gradually and relations to wholesalers develop in accordance with a specific pattern. The initial phase is always characterised by a number of meetings within a short span of time. This is intended to make the wholesaler feel that Nordex truly supports him. In the next phase the relationship is stabilised; ordering procedures become internalised and purchasing begins to follow a regular pattern. During this phase, the personal interaction between JU and the wholesaler decreases as the weekly orders, etc., are handled via administrative routines. Developing these relationships has required a great deal of resources but, once they are established, they are usually very durable.

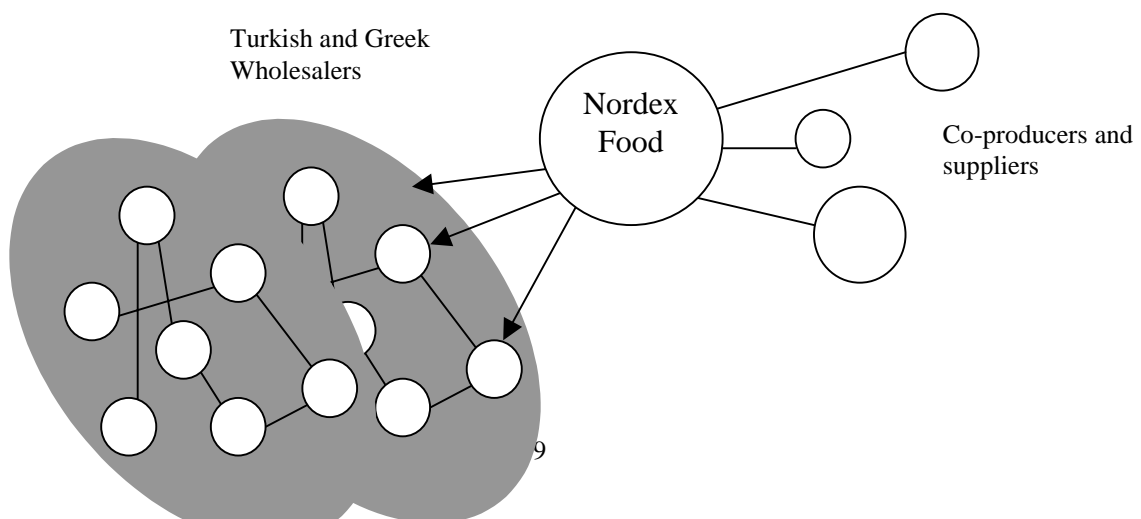
"We have had our customers for a number of years. I am always afraid of establishing a relationship with a new wholesaler and therefore I try hard to maintain already established relations. We know these customers, how they order and how they pay."

[Jørgen Ugilt]

Through a restrictive policy of payment on delivery, Nordex Food protects its interests. Experience with non-payment and sudden business closures have taught Nordex Food to deliver goods only after receiving payment for previous deliveries. Wholesalers are evaluated by means of an internal credit assessment based on general impressions of solidity and recent ordering behaviour.

The focal network of Nordex Food may be portrayed as in figure 3:

FIGURE 3: THE NORDEX FOOD FOCAL NETWORK



DISCUSSION

The case studies presented here suggest a number of issues which may be further investigated in the research on network-embedded routines. One issue is the important role of network-embedded routines as mediators in the creation of organisations and the idea that routines, in order to survive, may use an organisation as a carrier. Another issue is that of network-embedded routines supporting a specific way of organising business activities in order to maintain their own existence. This is the idea of reciprocal altruism mentioned above. In what follows, these issues will be addressed one by one.

The idea that some business contexts support the creation of specific forms of organisation better than others is far from new. Studies on business systems, for instance, have suggested that different forms of organisation will prevail depending on the different forms of supporting background institutions. Moreover, such institutions are usually, but not always, organised around a nation state (Whitley, 1992). Something which has had less attention in the literature, however, is the systemic quality of business networks which, through the retention of some specific order, may support the development of firms (Andersen & Kristensen, 1999). New business actors do not appear in the same way as “lumps of butter in a vat of milk” (cf. Coase, 1937) but rather benefit from ongoing processes of contextualisation. New project organisers may tap into the resources of existing skill containers, utilising their ability to capitalise on the reputational assets previously developed through ongoing interaction as routines are replicated in new business contexts (Kristensen, 1996). This pattern is especially clear in the case study of Nordex Food, the development of Nordex being in essence nothing but the bringing together of roaming network-embedded routines in a coherent frame of business enterprise.

Not only do reputational assets provide actors with access to complementary resources, but they also form a system of shared ways of understanding and interpretation which constitute systems of interlocked behaviour. By their nature,

these forms of interlocking routines have emerging capabilities and an elaborate ability to detect, disseminate and act on information (Perrow, 1986). This is, in essence, the nature of network-embedded routines and one explanation why networks sometimes supersede organisations in terms of being efficient routine carriers. This pattern is especially clear in the CCT case study, which reveals that the network nature of knowledge exchange provides all actors involved with positive network externalities through mutual and reciprocal altruistic efforts.

As regards the issue of the mutual support of network-embedded routines, it has repeatedly been shown that existing networks may benefit from positive interconnections with new actors as they may broaden the range of resources, and routines, available to them (Andersson & Molleryd, 1999). However, network-embedded routines may also support actors in the network, which may contribute to making network-embedded routines thrive beyond their origin. This is particularly clear in the CCT network, where positive network externalities thrive due to the addition of further industries to the CCT “hub”. An interesting development in this case is that CCT was recently acquired by one of its main customers, Vestas, a world-leading producer of wind turbines. As Vestas is aware of the importance of not only the routines of CCT but also the routines interlinked with other firms, they have, however, provided an open policy for CCT, making it possible for them to further their collaboration with other actors in the CCT network (Andersen, 2000).

MANAGERIAL IMPLICATIONS

A number of managerial implications follow from adopting the suggested perspective on network-embedded routines. The configuration and managing in a network of embedded routines outside the realm of the organisation provides challenges for the manager. There is clearly room for economic actors to undertake the function of matching firms to adjoin each other, i.e., firms which are dispersed in terms of economic space but may have complementary needs for exchange. As described by Hayek (1945), economic actors possess knowledge of the circumstances of the fleeting moment, which may be translated into economic value by interlinking actors with complementary schemata of needs and wants. From the point of view of the firm, the advantage of this arrangement clearly lies in the opportunity to both source and supply knowledge for the ring firms. The basic incentive lies in the participation in a buyer-supplier relationship with a capable supplier. The role of the firm generally

faces two principal problems, however. One problem is that of identifying and gaining access to embedded routines and the other is that of how the processes should be coordinated.

Identifying opportunities for coalitions and gaining access to them

Spotting opportunities for matching firms to adjoin each other can best be characterised as an entrepreneurial networking process. Kirzner (1973) describes the entrepreneur as a person who assiduously exploits opportunities by organising those in control of resources. From the perspective of the entrepreneurial actors in the learning economy, the industrial context presents itself as a set of complex interdependencies, which may be arranged according to the interpreting abilities of the actors. A learning exchange opportunity arises when the entrepreneur invents and devises a pattern which is seen as exchange-effective by other actors (Snehota, 1990). Successful actors possess unique capabilities in this respect and enact knowledge-matching opportunities rather than fill in opportunity slots.

As knowledge in a market economy is localised and situational, abilities to spot opportunities for matching knowledge often go hand in hand with network positions (Hayek, 1945). Entrepreneurs, like everyone else, obtain information in a social context and make judgements based on their interaction with others. Hence, spotting opportunities and accessing actors are often co-occurring phenomena. In itself, accessibility presents a unique problem for the firm. Even though firms may find it relevant to engage in exploiting inter-firm routines, they may also be reluctant in their attitude to this type of activity as it represents the potential threat of being “out-learned”. As described by Hamel (1990), inter-firm cooperation may be conceptualised as the competitive race of getting to the future first. Providing access to other firms may involve problems with establishing safeguards. Therefore, the challenge for the firm is to achieve interlocking intentionality, i.e., to convince potential partners that becoming participants in a system of learning cooperation is worth the effort and that the morals of partners present no hazard. Given the potential temptation to defect as the costs associated with participation may exceed the advantages, one firm – the broker – is responsible for establishing order. Hence, all partners must trust both the competence and the intent of the broker. Its reputation has to be credible, and it has to be clear to the parties involved that acting as a partner for the broker is complementary to any other business activity which it undertakes

(Nooteboom, 1999). This allows the broker to remedy the problem of knowledge revelation which was pointed out by Arrow (1974). Being viewed as competent and trustworthy by all parties involved, it is able to assess both the value and relevance of knowledge exchange without actually revealing, and thus supplying, this valuable knowledge.

Co-ordination in networks of embedded routines

The second strategic challenge facing firms relates to the question of accessibility, the social capital of the actors being vested in their network of friends, colleagues and general contacts.

The structure of the actors' network plays an important role for the accessibility to and combination of actors with complementary needs (Burt, 1992). Working with firms from different industries may, for instance, enhance the ability of the firms to develop innovations since scope for technological synergies is better achieved across complementary rather than identical knowledge-sharing interfaces (Kotabe & Swan, 1995). According to this view of social networking, developing links between firms may be conceived as a process of accumulating social capital which can be optimised by avoiding redundancy in network connections as multiple links to the same knowledge area do not provide the focal actor with any novel information. On the other hand, such policies must be traded off by a policy maintaining coherence in a portfolio of learning relationships (Andersen, 1995).

Firms face the classical problem of organising stakeholders: they have to develop an organisational form which both co-ordinates bilateral knowledge flows efficiently, i.e., to the exclusion of shirking and opportunism, and, at the same time, provides the incentives necessary for participants to continue cooperating. Social relations which provide participants with the incentives to cooperate are of crucial importance if the division of labour is specialised so as to ensure mutual learning gains (Lazonick, 2000). Both problems relate to the selection of members. Firstly, members have to have complementary interests in a specific area (e.g., process technology). At the same time, they should not have conflicting interests, for instance, as rivals in specific technologies or markets. Secondly, firms have to ensure that the learning contribution is fairly critical and relevant to all partners and that learning can be transmitted among partners at little additional cost, i.e., each partner's dedication of resources to this area creates a community good administered by the broker. This raises the important

problem of economising on the limited cognitive capabilities of the decision-makers' attention and absorption (Cohen & Levinthal, 1990). Thus, the firm has the related and important intermediation task of serving as a buffer between participants and superfluous information.

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ⁱ I am indebted to Professor John Matthews for general comments and for bringing the idea of selfish routines to my attention. Any errors and misunderstandings, however, remain my responsibility.