Investigating 'Thin' and 'Thick' Interaction Related to Development of a Rural Resource

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Abstract

Does interaction play any role in the development of a physical resource? And if so, is there some logic in this interaction? In this paper we investigate these questions in relation to two empirical cases which both regard development of a specific (rural) resource – goat milk. We start with a conception of classical market interaction and term this "thin" interaction. However, we do not find this conception of interaction adequate because in the cases interaction seems to 'contain' dimensions beyond price and preference. Hence, we argue that there are multiple dimensions related to interaction, partly because the resource, which is developed, has many features and potential combinations and partly because the actors that interact in developing it have different interpretations in relation to the resource. Thus, use and development of non-physical resources (knowledge) are part and parcel of the development of the physical resource we "follow." The challenges regarding resource development, and consequently rural and regional development, is thus for practitioners and researchers to understand and manage "thick" interaction processes.

Key words: Physical resource, actors, "thin" interaction, "thick" interaction, development.

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Problem

We can imagine three elements in relation to resource development; a resource, actors developing it and the process of development. Regarding the last element we want here to discuss one specific form development can take - interaction. More specifically we think of interaction between two actors, which in this case are firms of some kind. The two first elements – resources and actors - are in themselves structural and hence static. Consequently, a sole focus on the resource "side" would lead to technological determinism; the resource would solely be a result of technology. Merely focusing on the actor dimension would also lead to determinism; in this case social determinism. In both cases we would do a black-box explanation (Hedström & Swedberg 1998: 9); that is, we would treat the mechanism (or process) that was "between" the resource (explanandum) and for example actors as a black box. We want to open this black box. More specifically we want *to investigate how interaction influences the development of a certain resource*. This is the purpose of the paper.

Interaction and resources

The concept of interaction is general, and some generality is required if an explanans be powerful:

> Simply making up an ad hoc story tailored to a specific case does not constitute an acceptable explanation. (Hedström & Swedberg 1998: 10).

In certain schools within sociology the role of interaction between human individuals, *social* interaction, has been analysed (Waters 1994, Simmel 1950). In the encyclopaedia social interaction is defined as a:

> Situation where two or more actors (persons) exchange meaning experiences. In general interaction is direct communication – the communication is visible for those taking part – and may include all types of means of communication: speech, caress, facial expressions etc. Common to all such forms of expression is that they maintain or develop the reciprocal relation between the participants.

> Interaction presupposes furthermore some mutuality, for example address and response, among the participants, but on the other hand it do not presuppose equal abilities or equality. Situations marked by interaction are regarded dynamic as new meaning and communication is created on the basis of preceding course of events. (Aschehoug & Gyldendal 1995-1998). (Author's translation from Norwegian).

The theory of social interaction presupposes persons. In economic life actors can be persons, but also collectives of some form. Moreover, interaction can then contain economic and technical elements in addition to social elements (Håkansson & Snehota 1995, Håkansson 1982). In general interaction can be called a *contingent response pattern*. This is a pattern in which an action by actor A evokes a specific response in actor B (Weick 1979: 89). If B's response is then responded by A, we have a double interact. Weick (1979) argues that double interact is the basic element in organising. Thus, in interaction a decision, for example of an economic actor, is conditioned by a previous act of another actor.

Interaction leads to outcomes. In social interaction the outcomes are 'meaning,' 'social relationship' and 'society,' (Simmel 1950, Berger & Luckman 1967, Waters 1994); in other words products that (at least conventionally) are view as not physical. In our case the product has obvious physical features. On the other hand, the meaning that different actors tie to these physical features is still important if we want to understand why the resource is developed the way it is and why it attains its specific value. Thus, a physical element is not a resource unless an actor regards it as useful (Holmen 2001). Moreover, the value of the resource is dependent upon the actor's *specific* relationship to another actor:

> a resource [possession or capability of an actor)] is "an attribute of an actor's relation to another … actor[s], whose values define resources" (Emerson 1981, 41). A mother's capacity to offer approval is a resource in her relation with her child but *may not be in her relation with someone else's child*. (Molm & Cook 1995: 216) (Italics added)

If we, then, assume that a relationship between two actors is a result of (previous) interactions between the two, we can suppose that a resource, which is part of that relationship, is a result of the specific interaction in that relationship. That is, the resource would not have been the same if the actor had interacted with some third actor. Hence, we should be aware of the *particular* ways in which actors in the economic landscape relate to each other when we want to understand why and how resources and their use develops. In order to grasp the 'particularity of relating' we will suggest two concepts and investigate these: "thin" interaction and "thick" interaction.

"Thin" interaction

In the market as it is assumed in neo-classical economy[3] we find two types of actors, suppliers and buyers. Resources in the form of products that are sold (by suppliers) and bought (by buyers) relate these two types of actors. Originally, argues Swedberg (1994), the term market referred merely to something concrete, a marked space within which buyers could (physically) meet suppliers and vice versa in order to exchange one resource for another. With the development of neo-classical economics another meaning of market arose. Here the market:

> became an abstract concept that acquired tremendous analytical interest as a *price-making … mechanism*. … The concept of the market was *thinned* to such a degree that John Neville Keynes Sr.[4] spoke of "the hypothetical market". (Swedberg 1994: 259) (Emphasis added)

A consequence of this particular abstraction is that suppliers and buyers of a certain product are perceived anonymous to each other. For the first, the many suppliers of the product are not supposed to interact, and neither do the many buyers interact. Moreover:

[3] For a comprehensive presentation see for example Samuelson & Nordhaus (1998).
[4] Swedberg's (1994) reference on this point is Keynes Sr. [1891] (1955: 247-249).

> Buyers and sellers are in such free intercourse with one another that the prices of the same goods tend to equality easily and quickly. (Cournot [1838] 1927, cited in Swedberg 1994: 259).

Thus, both suppliers and buyers are presumed to treat the product as given (Håkansson & Snehota 1995). Then, price is the only dimension of the product that can vary. But the price is not influenced by direct interaction between suppliers and buyers that are known to each other, but by spontaneous interaction whereby buyers examine and compare the price of the product provided by many suppliers, and finally choose the cheapest one. Through this behaviour the buyer sends price signals back to the suppliers, not only to the supplier of the chosen product, but also to all other suppliers of the same product. But one buyer's price signals will not be sufficient "feedback" for the suppliers, but many buyers' signals will. The suppliers that are less preferred are assumed to lower their prices. This means that they react on the price signals sent by the buyers.

What we have, then, is an aggregate of suppliers and an aggregate of buyers sending price signals back and forth about a certain product they all treat as given. We will refer to this "back and forth" signalling as "thin" interaction. To employ the term interaction for this signalling is not unproblematic. Firstly, interaction is not used as a concept within neo-classical economics. Secondly, the concept of interaction – at least within Industrial Network Theory (cf. Ford 1998, Håkansson & Snehota 1995, Håkansson 1982) – presupposes that the actors that interact know each other, that they are specific. To refer to neo-classical price signalling as interaction is thus to extend the usual conception of interaction. However, if we, as Weick (1979), define interaction as a contingent response pattern, it is not totally senseless to view price signalling as interaction.[5] This interaction is thin because it unfolds spontaneously between a mass of actors that are anonymous to each other and because it is restricted to one type of information – price. Moreover this information is tied to one type of resource, product. Other types of resources, for example

[5] Richardson (1972: 890) also uses the word interaction when describing co-ordination through spontaneous market transactions "… as an indirect consequence of successive *interacting* decisions taken in response to changing profit opportunities." (Italics added).

facilities or business units are not at all influenced by thin interaction (Waluszewski & Håkansson 2002).

This has the consequence, that interaction when its is thin will not *in itself* affect the product. Hence development of the product, to the extent that it occurs, will take place internally to the actors, and then only by suppliers. The buyers are assumed to be passive (Ford 1998: 5) with respect to everything except obtaining price information and on these grounds choose to buy or not. This does not mean that the model of thin market interaction is 'wrong' in relation to resource development. What is crucial is the recognition that thin interaction implies the possibility of only a certain kind of resource development, namely internal development of resources. This has some implications for the quality of resources, for example a product. Only by 'making' the interaction "thicker" will the interaction could affect product quality.

"Thick" interaction

Thick[6] interaction refers to a situation where the interaction between two actors regarding a resource embraces more than simply and spontaneously sending and reacting on price signals regarding a given resource. Hirschman (1970) denotes the latter as 'exit' and finds that there is another possible way to recover the quality of a product, which he calls 'voice'. Instead of exit (not buying), the customers of a firm can express their dissatisfaction to the firm. This can lead to the firm:

> [engaging] in a search for the causes and possible cures of customers' … dissatisfaction. (p. 4)

[6] The use of the adjective 'thick' here draws on a section that regards the origins of institutionalisation in Berger & Luckman (1967). Institutions, they claim, arise from interaction over time between social beings, for example between man and wife. This small institution is at the outset fairly 'thin', that is, easily changeable and transparent for the two involved. The institution becomes thicker when a third party, like a child, enters the scene. Then "the objectivity of the institutional world 'thickens' and ' hardens', not only for the children, but (by a mirror effect) for the parents as well." (pp. 76-77). The interaction between man and wife becomes unquestionable, 'the way things are done' and hence thickness refers to the institution becoming massive, objective and real *for those involved*. This understanding of "thickness", emphasising repetition and habits and the importance of third parties, does not *accurately* denote what we want to express in relation to thick interaction in this paper, but it nevertheless captures elements (concretness, directness, continuity) that contrasts thin market interaction. See also Swedberg & Granovetter (1992: 17).

Furthermore:

> [Voice] can be graduated, … it implies articulation; … it is direct and straightforward… (p. 16)

Hirschman (1970) views voice as a typical political solution, while exit represents the typical economical solution. Also Richardson (1972) observes that there are more to markets and economy than exit. Markets are more complex than assumed within (neo-classical) economics, he claims:

> If "products" are thought of as items of final expenditure such as cars or socks, then it is clear that very many different firms are concerned with the various stages of their production, not only in the sense that firms buy in components and semi-manufactures from other firms but also in that there may be a separation of manufacture and marketing … or of development and manufacture … (p. 887).

In other words, there can be many firms 'between' the producer of a certain product and the buyer. This recognition points to the possibility that in some situations more than price signals is or has to be sent back and forth between firms or between firms and customers. In other words, there can be situations in which it can be 'economical' to interact more "thickly" – or as Richardson (1972) calls it, co-operate. Common to such situations, he argues, are two characteristics. Firstly, the output of an input used to make another output has to be matched quantitatively and qualitatively with that output. Secondly, the making of the input requires different capabilities (knowledge, experience and skill) than the making of the output for which the input is used. Because different capabilities are needed, it will (normally) be economical to make the input in a different firm than the output. But the firms have to co-operate, that is interact "thickly," in order to match their respective plans in advance. Thin (spontaneous market) interaction will not give the parties sufficient information for such 'matching of plans.' Matching of plans thus represents interaction that is thicker than thin interaction because the interaction 1) affects the *product,* and 2) the parties consider the *use-side* of the product.

However, planning is not the same as development. Planning regards production scheduling (Gadde & Snehota 2000: 309) and hence has with co-ordination of activities (Dubois 1998) to do. And co-ordination of activities is linked to productivity (Håkansson & Snehota 1995, Araujo et al. 1999) and cost efficiency (Dubois & Håkansson 2002). The interaction *itself* in the form of matching of plans does not affect the product; hence, like in thin interaction, there is no *mutual* development of resources between the actors. For mutual innovation to occur the actors must "increase the number of open-ended parameters (Araujo et al. 1999). In such interaction:

> [the] parameters will, …, become the subject of negotiations before any decisions on specifications and production activities can be made. (p. 502).

In this case for example a supplier will have possibilities to directly develop knowledge regarding a customer's resources, how they are used and perceived.

What is said about interaction in the "economical world" above is not that one type of interaction *in general* is better than the other; thin interaction is neither 'worse' nor 'better' than thick interaction. Both variety and heavyness are needed in business networks (Håkansson & Ford 2002), and interaction in the real world surely reflects this.

Our main concern in this paper, however, is development. We will argue and try to show that, to the extent that interaction is in question (and here we deal with interaction *between* firms), only thick interaction matters in relation to development. And since development presupposes knowledge, interactive development must include learning:

> Variety means that a company should interact to continuously learn and develop the way it is embedded in its relationships and the network. Variety requires ever-new *conceptualisations* of situations, relationships and business units. (Håkansson & Ford 2002: 138).

Thus, instead of letting interaction follow as an (efficient) co-ordination mechanism from the chosen product, we can let the product follow as an (innovative) consequence of interaction. The resource turns from given to "open" (Håkansson & Snehota 1995) or, if one wish, from independent to dependent variable. The question turns to: What can we accomplish (regarding resources) if we interact?

This way of posing the problem leads to two questions. The first regards the relation between interaction and resources. It may be, and is often, tied to technical development (Håkansson 1989). Here the crucial thing is to "allow" more dimensions of the resources in question to vary. The second question regards the relation between the structure of actors and interaction. Håkansson & Snehota (1995) refer to this structure as 'web of actors.' It has to do with the social bonds that exist between business units and that actors' may attribute different meanings, for example to technical items (Dubois & Håkansson 2002: 11). The term web of actors has parallels to the notion institution (Jepperson 1991).[7] In this paper we concentrate on the first of these two questions, that of interaction in relation to resources, more specifically development of resources.

Two cases

Introduction: Prevailing use of goat milk in Tine up to around 1990

Up to around the mid 1990s goat farmers in Norway sold their goat milk to a farmers' owned co-operative dairy company in their region. Like any member a goat farmer had both right and obligation to deliver all milk that it produced to this company. Moreover, all the regional companies owned and were members of a nation-wide, common organisation, Norske Meierier – from 1992 named Tine.[8]

Of goat milk Tine dairies produced mainly brown (lactose based) cheese in pure or mixed (with cow milk) version. Tine sold, via different retailers, this brown goat cheese to

[7] This author writes on p. 145: "*Institution* represents a social order or pattern that has attained a certain state or property; *institutionalizing* denotes the process of such attainment. By *order* or *pattern*, I refer … to standardized interaction sequences. An institution is then a social pattern that reveals a particular reproduction process."

[8] For the sake of simplicity we use the name Tine also concerning Norske Meierier before 1992.

customers all over Norway. Tine experienced that, as a peculiar Norwegian food tradition, brown cheese sold almost "by itself." It did no development or special marketing efforts in relation to brown goat cheese. However, Tine's statistics showed that the sale began to shrink during the 1980s and early 1990s (Kvam 1999). In addition, studies showed that few people below 60 years bought goat cheese. In the 1970s Tine had developed a white (casein based) goat cheese. In contrast to brown goat cheese Tine sold about half of the white goat cheese outside Norway. The sale of this white goat cheese remained very low and the price for it was ordinary.

Thus, the use of Norwegian goat milk contrasted the use in countries on the European continent – for example France, where white goat cheese was regarded as a delicacy that "experienced" significant sales and brown cheese was an unknown phenomenon (Alme 1999). Because of the almost exclusive reliance on the rather 'undemanding' product brown cheese (Skeie 1998), neither goat farmers nor Tine found it necessary to develop the quality of the goat milk. For example, in the early 1970s Tine started to differentiate the price it paid for cow milk according to certain quality criteria, but never applied this practice to purchasing of goat milk. Up to 1990 goat milk was very little researched by scientists in Norway.[9] In most respects goat milk produced by Norwegian farmers was handled as cow milk, which for Tine in volume and economic importance far exceeded goat milk.

1. Goat milk in relation to a farm dairy - Skånaliseter

Ola took over the goat milk farm, Skånaliseter, from his uncle in 1981. The farm, which is located in a mountain area in the middle of Norway in the municipality of Røyrvik, then delivered the entire goat milk from its around 100 milking goats to Namdalsmeieriet. Together with the milk from the about ten other goat milk producers in Indre Namdal, Skånaliseter's goat milk was sent to Namdalsmeieriet's dairy in Namsos, about 150 km

[9] These scientists were–and still are–for the most part found in Tine (the R&D Department) and Department of Food Science at the Norwegian Agricultural University. In 1993-94 persons from these two institutions carried out a project (MIDAS) aimed at developing a new white cheese product based on goat milk. This mutual effort resulted in 1994 in Snøfrisk, a soft, white goat cheese. This project took place *while* the events described in case 1 below unfolded and *before* the happenings described in case 2 below.

away. This dairy made brown cheese of the goat milk. In 1980 the dairy purchased 109.565 litres of goat milk, which was very little compared to 47 million litres of cow milk supplied from around 800 cow farmers in the region (Erland 1996: 262). It did not take long time after Ola had taken over the farm before he got to know – informally - from personnel at the dairy in Namsos that the goat milk was not very popular:

> But then there was, that we heard (…), that the goat milk was not so very popular in the dairy co-operative. It was regarded somehow as a little rubbish in the machinery. It was a dairyman in Namsos, he said something like: 'This is some junk. Shoot the goat!' (…) I felt that we were in a way a ball and chain for the dairy system.

In the 1980s the brown cheese boiler, where all the brown cheese was made and hence all the goat milk was processed, had become old and had soon to be renewed. In co-operation with Norske Meierier, Namdalsmeieriet made the decision not to renew the boiler, and as a consequence (food) processing of goat milk in Namdalsmeieriet ended. However, all the goat farmers continued to deliver goat milk, but now Namdalsmeieriet would sell it to animal farmers as fodder[10]. This was the most profitable use of this goat milk for Namdalsmeieriet in the new situation.

Conversations and negotiations

Ola and Kari had ever since they got to know that the goat milk that they produced was unpopular in Tine, speculated on doing the processing themselves on the farm. They regarded their goat milk as an excellent raw material and were convinced that there where customers 'out there' who wanted special goat cheese. Their view got support when they, on a study trip to Jämtland in Sweden in 1985, talked to goat farmers that successfully had started their own farm dairies. Because Skånaliseter was the first farm in Norway to confront the prevailing rules regarding production and processing of milk, they experienced some problems that had to be solved. Around 1980 only small amounts of

[10] Norwegian goat farmers were – and still are - paid full price for their milk, even if it is sold as feed and obtains a less price. The difference in price, which in 1999 all in all amounted to about 8,75 million kroner, is compensated from a central, semi-public fund managed by Omsetningsrådet (Agricultural Distribution Board).

goat milk produced in Norway was processed on farms, and this took mainly place in summer when the goats stayed on outfield pasture.

In 1988 a working group was established to have a look at new ways of utilising the goat milk in the region. A new trip was arranged to study goat milk processing in Jämtland in Sweden and Undredal in Norway. The group concluded positively about farm processing of goat milk and sent an inquiry to the Ministry of Agriculture in 1988. This lead to certain regulations being changed so that it became possible for farmers under specific conditions to process their own milk. A project was then (1992-1994) carried out in co-operation between Namdalsmeieriet, the goat farmers in Indre Namdal and agricultural authorities in the county of Nord-Trøndelag. The plan, to establish a special "niche" dairy run by Tine Namdalsmeieriet, stranded. This was due to that representatives of Tine did not find the planned dairy profitable, which again was caused by their assuming standard (Tine) prices of the products that it imagined that the new dairy should produce. Tine stopped their involvement in the project in 1994 and without Tine the other goat farmers also withdrew. Then Ola and Kari stuck to their original plan; establishing farm-based processing. An important decision from Tine that influenced their plan was that Tine expressed that it would not hinder Ola and Kari in establishing a farm-based dairy if their products did not collide with Tine's products. Moreover, Tine declared that they wanted to facilitate conditions for members who wanted to serve such 'special' markets.

Developing competence in interaction

After nearly ten years of preparation Ola and Kari realised their plan regarding farm dairy, and started to produce cheese in 1995. They started with producing two cheeses that Ola's mother had been making, one brown and one white cheese. Because they experienced some problems in making white cheese, they decided that Kari attended a course in cheese making at Åsbygdens Naturbruksgymnasium in Jämtland in 1997. They knew the centre quite well from two earlier study trips. At the course Kari learned basic cheese making and she also got to know recipes of some "basic" cheeses. She also learned coating, that is, putting wax around the cheese. All in all the course led to more stable production and product quality and broader range of products at Skånaliseter.

Because there was little knowledge in Norway about small-scale cheese making, there existed also little knowledge concerning appropriate equipment and from who to buy it. Based on discussions with the Swedish cheese makers in Jämtland, which had good experiences regarding their type of cheese making vat, Kari and Ola decided to buy a vat from the same Dutch firm – Rademaker. This firm supplied food processors and large-scale households.

In 1998 Skånaliseter was given the offer to join a national R&D program aimed at helping small food processing firms. Skånaliseter took part in the project and hence got to know Frida who is a Namsos based food consultant with training from the Department of Food Science at the Norwegian University of Agriculture. She works partly as an independent food consultant and partly as a co-worker in one of the travelling firms Skånaliseter co-operates with. She gives advice regarding food and dishes. Ola and Kari have frequent contact with Frida in order to learn new "secrets" of goat milk and how their goat milk products can be used together with other products in new ways.

Developing distribution and sales

Ola and Kari had to find and reach customers for their products. As members of Tine they could have aimed at Tine's customers and used Tine's resources for distribution, including the resources of retailers that sell Tine's products. Based on experience from an other small-scale cheese maker Ola thought that Tine's delivery times were too long and made customers dissatisfied. The couple therefore decided to handle each order individually. Normally the cheeses get along with post, train or bus.

Ola and Kari wanted to sell their cheese products together with rich information about them. Because the large retail chains usually have no manned cheese counter in their shops, Skånaliseter has up to now chosen not to let these chains[11] sell its products. Instead their products are sold in specialised food shops where there are assistants who can inform customers about each different cheese from Skånaliseter and cut it individually. Moreover the whole range of products that these shops have suits the

[11] There are four retail chains in Norway: The Hakon Group, REMA, The 'Norge' Group and Coop.

products of Skånaliseter farm dairy. Skånaliseter also co-operates with other farm shops in selling each other's products, and with travelling firms in their region. One reason that travelling firms have cheese from Skånaliseter on their menu is that their customers asked for cheese from the region they visited.

Ola and Kari looked askance at the price that their colleagues in Jämtland had on their products when they decided the price of their own products. It meant a price about the double of the price of an "average" Tine cheese, which was about 60 NOK per kg. Ola and Kari soon experienced that their customers willingly accepted a price of 120 NOK per kg for their standard cheese. 'Within' each cheese Kari can, against a 50 to 100% increase in price, make customised variations regarding form, size, salting, ripening and packaging, depending on customer orders or what she has noted specific customers normally want.

The basic philosophy of Skånaliseter farm dairy is to produce cheese products that "stand out from the multitude". The couple has realised that all types of packaging and design can make a cheese product special and thus give higher price.

Quality of milk and cheese and interaction with suppliers and customers

Quality is doubtless the most important sales promoting factor for Skånaliseter. In the couple's opinion lack of quality due to bad milk may have given goat cheese a bad reputation among many people. This opinion is confirmed by one of their customers, Ost & Bakst runned by Gitte, which is one of four specialised food shops that sell cheeses made by Skånalister:

> It is a huge difference between the goat cheese that I got from Tine and the one I got from Skånaliseter. (…)The cheese from Skånaliseter has a rich taste – it is not insipid, it is sufficiently firm so that the cheese slicer can cut all the way through, (…).

Regarding goat cheese samples are especially important, thinks Gitte:

> Norwegians seem to associate goat cheese with very strong taste. When they taste the Skånaliseter cheese many customers get surprised; it is milder than they had expected.

Ola and Kari have ever since they established the farm dairy in 1995 received inquiries that exceed their capacity. In 2000 Skånaliseter makes seven different white cheeses and three brown cheeses. Their annual sales of cheese in 2000 were about 500 000 NOK, but their goal is to reach 1 mill NOK. The limit is lack of raw material, i.e. goat milk. Therefore they made an agreement with Tine and the other goat farmers in the region in the spring of 2000. In June this year Tine made five test deliveries of goat milk from the other goat farmers. The cheese fermented wrongly and had to be scrapped because a certain unwanted bacteria had entered the milk. The source of the bacteria was located to silage balls on one of the farms. The supplies were then stopped until Tine and the other goat farmers had solved the problem. Skånaliseter will probably demand that the farmers abandon silage and starts to feed their milking goats with hey if the supplies shall be resumed, because the unwanted bacteria thrive in moist feed. An additional point in this respect is that Ola and Kari know a colleague in Sweden that has been able to take a higher price for its cheeses because he uses his using hey (and not silage) in the marketing of the cheeses. The couple's hope is that Tine can start regular deliveries of goat milk from the other farms in 2001 and have then planned to enlarge the cheese factory and the store at Skånaliseter.

2. Norwegian goat milk 'meets' Californian customers – reinterpretation of a feature

Tine Haukelid is a dairy located in a mountainous area in the south-west of Norway. It is part of a regional Tine dairy company, which again – together with other regional dairy companies in Norway – owns a common business unit, Tine Norwegian Dairies – Tine for short. Tine Haukelid is one of the very few dairies in Norway that only makes goat milk products. The goat milk is supplied by some fifty goat milk farmers.

Interacting with a new customer with a product

Until 1995 Tine Haukelid had made brown cheese of the goat milk. Then Tine – via their US subsidiary Norseland Inc. – received a request from a Californian firm. The firm was called Laura Chenel and had since the late 1970s been running a dairy, which made various ripened and non-ripened cheeses out of goat milk. The firm also included a goat milk farm. This farm together with around ten other farms in the area supplied goat milk to the dairy. Chenel sold the products to specialised food firms in the region. The unripened frozen curd was sold to firms using it as an ingredient in among other things pizza. It was a rather popular product and Chenel could have sold more of it if the supplies of goat milk had been larger. But in the area there were no additional goat milk farmers, mainly because the cultivated land was "occupied" by wine producers. In some way Chenel and Norseland Inc. got in contact, and the latter learnt that Chenel could have sold more frozen goat milk curd if someone could supply it with more goat milk *or* frozen curd. Norseland took contact with Tine which offered to supply Chenel with frozen goat milk curd. Tine chose to locate the production to Tine Haukelid, which started the production in 1995.

Taste problem enters the new relationship

In late summer this year Chenel experienced strong taste in the deliveries from Tine. Chenel had never experienced this before. The strong taste continued and Chenel informed Tine that it could not accept further deliveries until the taste became "normal." Both parties thought that the problem was linked to processes within the dairy, and since Chenel was the most experienced of the two regarding production of frozen goat milk curd, Chenel offered to "fly in" to Haukelid experts from its own dairy. Together with personnel from Tine the experts came to the conclusion that nothing was wrong with the processes in the dairy. The problem had therefore to be sought elsewhere. Chenel sold its Frozen Curd as a 100% goat milk based product. Hence Tine realised that to "camouflage" the strong taste by for example substitute components in the product or blend it with non-goat-milk components would not be any solution.

Linking up to scientists

Tine decided to research the "raw material" for the Frozen Curd – the goat milk that Tine Haukelid purchased. Tine contacted two institutes at the Agricultural University – Department of Food Science and Department of Animal Science. Both were old "acquaintances" for Tine and accepted to join a project together with two of Tine's departments – Department for Organisation and Department for Research and Development – in order to solve the puzzle.

The project would last four years before the causes of the problem were mapped. The dairy at Haukelid could not wait that long without delivering, and started weekly testing of the taste quality of the goat milk from each supplier. Milk that did not satisfy the quality for Frozen Curd was used for making goat milk powder or fodder. Not until 2001 did Tine start to classify the goat milk it purchased and differentiate the price.

Discovering new technical relationships

Researchers from the Departments of Food Science and Animal Science co-operated in some smaller projects during the project. They carried out several field experiments in which they had access to the goat herds of several suppliers, including suppliers to Haukelid, and the Agricultural Universities own herd. By seeing the results of these experiments in light of various research literatures from home and abroad they were able to show that the taste Chenel disliked had to do with the fat component in the goat milk. The fat in milk exists as globules. A globule consists of various fatty acids surrounded by a membrane. When this membrane gets fragile and breaks the acids are freed and will be attacked by certain enzymes. This process creates components that contribute to strong taste.

Taste, climate and fodder

The crucial question then was what made the fat membrane fragile. The researchers found that this occurred when goats had energy deficit. Energy deficit means that the daily intake of fodder is less than the body needs for its processes. The body will mobilise the deficient energy from "itself" resulting in the goat becoming less firm. The Californian goats supplying Chenel never met conditions that would result in energy

imbalance because they were held in fences all the year around in relatively warm and dry air and were fed by cattlemen. Also the goats supplying Haukelid would experience similar conditions most of the year, *except late in the outdoor season*. In summer season the milking goats are let off for grazing on outfield, often mountainous, pastures. Late in summer the temperature drops, the air will often be more humid, the grass will be poorer and consequently the goats must make longer trips in order to find fodder. That is, their bodies will use more energy, while the intake of energy through the fodder will decrease, resulting in energy imbalance, which again would give their milk a stronger taste. Therefore Chenel and its customers would experience strong taste when eating Frozen Curd wholly made of late summer goat milk delivered to Tine Haukelid.

As the goats were held on the farm for milking from evening to morning every day in the outdoor period, the farmers could give them extra fodder to keep them in energy balance. Tine took contact with the large fodder supplier Felleskjøpet. In co-operation researchers from the Agricultural University and personnel from Tine and Felleskjøpet managed to develop a new concentrated fodder specially designed for milking goats. This fodder was commercially available for the goat farmers in 2000. In the same period personnel at Tine's department for organisation (which have a central headquarter and advisers working locally) worked to educate the goat farmers on the basis of the new research results and about the new fodder. In March 2001 the director at Tine Haukelid could tell that in 2000 85% of the goat milk that the dairy purchased could be used for producing Frozen Curd. Two years earlier the figure was 35.

Genetics and taste

In addition the researchers at the Department of Animal Science found that individual goats differed regarding ability to produce strong milk; about one out of ten would produce milk with strong taste also when not exposed to extreme climate and poor fodder. As a consequence of this observation and the experiences regarding taste in relation to Frozen Curd and Laura Chenel, the National Goat Breeding Board (consisting of two (farmer) members from the Goat Farmers' Association, and members from Tine, Department of Animal Science and Ministry of Agriculture) decided in 1996 to change the goals for goat breeding when it came to milk. Up to then high milk yield was the only

criteria in relation to milk when selecting goats for breeding. Now the board decided that taste also should be a criterion, as can be seen from their formulation: "Develop a goat that produces milk with good and distinct taste".

Confronting interpretations of taste

However, it was not so that taste in relation to Norwegian goat milk was a non-topic before 1996. For long Norske Meierier/Tine has employed panels of taste referees to test the taste of milk and milk products. Before the aforementioned goat milk project the practice was to give samples points on a scale ranging from 1 (representing 'weak taste') to 5 (representing 'strong' taste) (Skeie 1998). Then Tine and the food scientists regarded strong taste as a good thing in relation to goat milk, hence the use of the negatively 'charged' term 'weak' (and not 'mild') for the opposite situation. The researchers in the project found this way of classification inappropriate because it appealed to subjective experiences among taste referees. For example the researchers had experienced that one and the same sample was judged as 'normal' by a panel of elder referees, while a younger taste panel classified it as 'strong'.

Instead the researchers proposed a scheme based on goat milk consisting of three taste elements; 'goat,' 'rancid' and 'harsh.' This scheme also acknowledged that goat milk had and should have a distinct taste – goat taste – but that this taste should not necessarily equal strong taste. Put differently, 'strongness' of taste should not anymore be the much-coveted feature of Norwegian goat milk and derived products, but goat milk should still have a characteristic taste. What Chenel had disliked, then, was Frozen Curd made of goat milk with goat taste *and* rancid and harsh taste.

Analysis

Finding new ways of using it can develop a resource. New uses can be found when actors start to research, which can:

> take the form of research into its [the resource's] characteristics or of research into ways of combining its known characteristics with those of other resources. Penrose (1995: 77):

The purpose of this paper is to investigate the *interactive side* of such research for finding new uses – that is development. Both in case 1 and case 2 we "find" actors interactively searching for new uses of a certain resource, in both cases referred to as goat milk.

The introductory section shows that up to 1993 little or no planned efforts were done to develop goat milk produced by Norwegian goat farmers and used by Tine. We have no information about interaction between actors concerning goat milk before 1993 (with the exception of case 1), so we cannot know for certain the *'thickness'* of the interaction going on in this period.

Case 1

In case 1 the user of the resource *changes* the use of it. Judged in terms of money paid to the suppliers the user values the resource as before. That notwithstanding one of the suppliers experiences the customer's new use of the resource as meaningless and starts searching for other uses. In fact the search starts earlier with oral interaction between Namdalsmeieriet and Skånaliseter early in the 1980s ("shoot the goat" and so on…). By this 'voice' Namdalsmeieriet lets Skånaliseter know how they regard this concrete resource in relation to itself (the company) and that ending the use of the goat milk for cheese making is one probable option for future.

Ola on his side, led by a vision that the resource has more usable features and that it can be valued in relationships to *other* customers than those of Namdalsmeieriet, *act upon* Namdalsmeieriet's 'voice.' He, later joined by his wife, starts to search – first in his mind, later by visiting and conversing concrete other actors using the resource in another way. Visiting and conversing represents thick interaction. Moreover, in this case it is more than simply *ex ante* matching of plans; it is not so that Ola already have a (given, customised) product, but not the capability to produce an input to this product and as a

consequence needs to interact with another actor. Instead he and his wife starts to interact with other actors with the intention to find new uses of the actual resource, which in this case is the *specific* goat milk produced on Skånaliseter (and not goat milk in general).

Each of these interactions is thick as the actors allow more of the "parameters" of the resource to be open. The thick interaction affects the product and incorporates the use-side of the resource. More specifically the interactive search takes the form of finding new ways of combining the existing features of the resource with those of other resources, while there are quite few examples of interactive "research into characteristics" (of the resource). One of the few examples are when Kari, after having operated the dairy for some time, discovers a – for her – new feature of the resource, casein-coagulation takes longer time late in the lactation. This discovery is not the result of any intentional 'research into the characteristics of the resource,' nevertheless she discovers. However, she does not utilise the discovered feature in any product; she only uses it to "fine-tune" the production.

There are more interactive searches for new combinations (of the resource's existing features). For example, interaction with specific agricultural authorities leads to specific regulations within the national agricultural policy being changed. Another interaction, with specific goat farmers and an education centre in Sweden, results in that Skånaliseter develops products and capabilities (regarding cheese-making, price setting, choice of equipment etc.). All in all, then, Skånaliseter is able to use the goat milk in another way than Tine, mainly by relating it differently to the same resources (as Gitte's shop, which also sells Tine cheeses) and to new resources (like Kari's special cheese-making capabilities and cheese-making vat). All the new interfaces that the goat milk that Skånaliseter produces become part of, result from Skånaliseter's thick interaction with other actors.

Case 2

Case 2 also centres around goat milk. Here the development starts when the user accepts a request from a new customer to supply it with a product that it already produces itself.

Thereby the goat milk, via a certain product, meets customers that are new to it, but not to the product. This meeting is a confrontation, which leads to several rounds of thick interaction, between different actors, aimed at adjusting the physical product (Frozen Curd) to the customers. In contrast to in case 1 scientists are also engaged in solving the problem. The development here is of another kind than in case 1. There the problem was to find new ways of using a resource that had 'good' features. In case 2 the challenge is the opposite. The existing user had found a new way to use the resource. The problem was that the resource did not fit in the interfaces following the new use. Thus, the interactive search that the actors carried out regarded the provision side of the resource.

Working on the provision side the actors found it crucial to research the characteristics of the resource. This is the reason why technical scientists took so much part in the interaction in this case. And as it seems, together and after some years they succeed in changing the physical features of the problematic resource – the late summer milk. Now we must hurry to add that all this thick interaction not necessarily had to result in accurately these new combinations and features. The outcome was unique in the sense that the actors considered some resource features as given, for example that between milking goat and mountain pasture. If, alternatively, the goat farmers had "given up" this interface (and instead held milking goats within fences also in the summer season, like the Californian farmers supplying Chenel) it would maybe have been unnecessary to develop the new concentrated fodder product.

But the most interesting thing about case 2 is perhaps that it reveals that resource development is not only about developing the *physical* resource. If so, the actors in the case could entirely have ignored questioning the way actors interpret the feature taste. But they do not. Instead the scientists start their work with questioning the way taste of goat milk is regarded. This they do after having interacted with panels of taste referees differing in age. The result is that what once was regarded as right taste (strong) no longer is interpreted as right. Instead right taste becomes mild, something that earlier was referred to as 'weak.' The actors' reinterpretation of the feature taste in the case cannot be seen in isolation of their altering this feature physically and vice versa. And nothing of this would have occurred without thick interaction.

Conclusion

Through a conceptualisation of business interaction as 'thin' and 'thick' we have tried to gain new understanding of the role of interaction when it comes to resource development. Through two case stories, constructed on the basis of open-ended interviews and documents, we describe how some actors in interaction develop a resource in the form of new combinations and new features. Thin market interaction surely has its legitimacy. It is cost efficient. Nevertheless, more direct and continuing mutual involvement, even if more 'expensive,' can 'pay off' when it comes to development. The alternative is to do the development work within the firm in the light of price signals received from an atomistic market.

The fruitfulness of thick interaction may be that the use of a (concrete) resource can be confronted with the way it is produced. In this way the quality of the resource can be maintained and developed. Moreover, actors interacting 'thickly' can reveal, discover and even develop their respective interpretations of the resource.

While thin interaction is one-dimensional, judged from the cases, thick interaction has many facets and can thus be quite varied, not only regarding the *degree* of involvement, but also regarding the *kind* of involvement. In relation to development especially two dimensions seem to matter. The first regards the *resource*; if, how many and what kinds of 'technical parameters' is allowed to be open. The other concerns the *actors*; if and to what extent interpretations of the resource are questioned. Thus, use and development of non-physical resources (knowledge) are part and parcel of the development of a physical resource. Hence, practitioners striving with developing resources of various kinds and researchers studying such processes should be aware of and understand "thick" interaction.

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