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Versions of Milk and Versions of Care: The Emergence of Mother's Milk as an Interested Object and Medicine as a Form of Dispassionate Care

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Argument

At the turn of the twentieth century the Norwegian market flourished with milk products intended for infants. But medical doctors argued in favor of “going back to nature”: Women ought to breastfeed their children. This paper explores how a re-naturalization of mother's milk emerged within experimental medicine. The prescribed “natural way” did not develop within medicine alone. The paper demonstrates how the natural developed within a relational space of different versions of milk: the free-market milk, the dirty and decaying milk, and the non-nutritional milk. But why did Norwegian mothers, in contrast to the development in for instance the US, continue to breastfeed their infants? Drawing on the work of the leading pediatrician Theodor Frølich, the paper suggests that this may in part be explained by the development of a distinct version of care: A matter-of-fact, pragmatic and flexible version of care that nevertheless came to enact mother's milk as the supreme form of nutrition to which there was hardly a competing or healthy alternative. “The natural way” became a thought style and was made integral to everyday culture.

“Back to Nature!” This was the slogan the Norwegian medical doctor and pediatrician Theodor Frølich brought back home to his local audience from a meeting of the Medical Society of Berlin in the spring of 1903. Let it be said, Frølich was not looking for a retreat to nature as opposed to an emerging urban life. The issue was not Nature as opposed to Culture per se. Rather, his concern was more specific. His concern was the ways in which mothers nurtured their children. The slogan “back to nature” was meant to encourage women to breastfeed their babies and to operate as a remedy against the woman's decreasing capacity (and desire) to nurture her children.

At the turn of the twentieth century, Norway or Scandinavia more broadly, was not alone in prescribing mother's milk as the natural alternative. In America, the overwhelming majority of infants received their nourishment from breast milk in the nineteenth century. But over the next century this changed dramatically. According to the analysis of Rima D. Apple, a growing medicalization, scientification, and commercialization of the feeding of infants led to this shift from breast to bottle

process. By the mid-twentieth century, mothers had lost their special positions and instead babies were bottle-fed under medical supervision (Apple 1987; see also Golden 1996).

In Norway the events turned out quite differently. One of the remarkable and interesting features of the Norwegian picture is that the position on the issue of infant feeding with which I introduced this paper prevailed – and mothers continued to breastfeed their children (Ellingsæter 2012; Løkke 2012; Rosenberg 1989).¹

There exists already a rich academic literature that may help us to place the medical doctor and pediatrician Frølich and his concerns in a wider historical context: At the turn of the century the issue of infant mortality had become a major transnational issue. This was often linked to a profound concern with a diminishing population (e.g. Klaus 1993; Blom 2008; Hörnfeldt 2009). Mothers and their children became the target for intervention (e.g. Ohrlander 1992; Milton 2001; Lundqvist 2007) – and sometimes and in some places this developed into a veritable ideology of motherhood (Davin 1978). Part of the picture is also the emergence of new professions or social groups that competed for control over women's ways of relating to their children (see e.g. Weiner 1995; Blom 1988; Öberg 1996). Doctors and more specifically the new profession of pediatrics were among the key actors (see e.g. Berg 2009).

In approaching the Norwegian case, this paper has nourished itself on the rich literature referred to above. The paper nevertheless pursues a partly different take on infant care and the milk issue than has so far been prevalent. Put a little differently: It argues that there exists a set of resources that may enable us to open up and approach history of health and medicine, and the milk issue, from new angles. The stories that have so far been told have often been versions of social and political history and, related to this, stories of expertise and professions framed as questions of power and control. Often written from a feminist and liberating perspective this research has painstakingly and importantly alerted us to see that the issue of control over bodies, and women's bodies, matters. However, surprisingly little has been written on the sciences themselves in these stories. And when this *has* been done, this is often, as in Rima Apple's example above, done by help of notions like medicalization, scientification, and instrumentalization (see Blom 1988).

The objective of this paper is not to perform any profound comparison between the Norwegian and the American case, or related cases – such as for instance the UK (for the latter, see e.g. Dwork 1987). The matter of fact that there are strikingly different outcomes between the Norwegian and American case may nevertheless already alert us to the possibility that “medicine,” or “milk,” or both, have come in different versions. To put it in another way: Medicine and milk may have been enacted differently in Norway than in the United States. This might imply that notions like “medicalization” and “scientification” do not in themselves explain that much.

¹ This is not to say that breastfeeding has been equally prevalent throughout Norwegian history, but every time breastfeeding has been on the decline the situation has been turned around (Ellingsæter 2012).

Multiple versions of objects: the challenge to history from the social studies of medicine

The point above applies directly to one of the theoretical resources this paper will draw from, namely recent contributions within social studies of medicine that have questioned medicine, or Western Medicine, as a unity. Rather than a reality the unity of medicine has been a normative standard against which real practices could be compared and contrasted (Berg and Mol 1998). “Western Medicine,” it is argued, was a unity created by anthropologists as a counterpoint to the medicine that could be studied in other cultures. This image began to fall apart as anthropologists began to study health-care systems within North America and Europe: Instead of one delineated biomedical system and beliefs – one encountered many (ibid.).

Arguably, the same “unloosening” that happened to medicine happened to professions (ibid.): Whereas the unity of the medical profession often had been emphasized, this started to loosen up for the benefit of seeing different ways of performing the profession in different settings. Hence, this opens up not only for the, in principle, multiple ways in which medicine and the medical professions (and other health workers) are enacted, but also for exploring more closely these practices as they are performed in various settings. This is precisely what a series of studies within the field of social studies of medicine have been contributing to in the last fifteen years or so – and what this paper modestly seeks to add to.

But what does this turn to practices entail more precisely? The contributions to social studies of medicine that I relate to in this paper, have developed from the so-called laboratory turn in the social studies of science in the 1980s (e.g. Knorr-Cetina 1981; Latour and Woolgar 1986; Latour 1987). This turn to laboratories as the setting for empirical studies implied that researchers wanted to address the so-called hard core of science (Knorr-Cetina 1995). Social scientists were not any longer satisfied with studying what philosophers *said* about natural science and their practices. Likewise, they were dissatisfied with being left with how the sciences were perceived, understood, or interpreted – i.e., the ideas of science. The turn to laboratories implied an interest in exploring the ways in which scientific facts were enacted in practice: hence how objects (for instance, diseases) were being realized; i.e., being made real.

The turn to versions

So, to draw these approaches together, we might say that this branch of science studies have been pursuing science, not as *social* constructions (as scientific objects are not entirely made by humans), but as entities that are made real, or as we could suggest, realized. But as alerted to already above: The argument is not that science, medicine, or objects come in *one* towering version. Rather, they are realized in multiple versions. This also goes for care-practices as these are enacting health, medicine, and the patient differently in different settings (for a very interesting example, see Pols

2006). Philosophically, this implies a break with “perspectivism,” i.e., that there is *one* real underlying version, but a range of different ways of interpreting or looking upon it (see e.g. Harman 2009; Mol 1999). Rather, realities are enacted differently in various settings (see e.g. Mol and Law 2004; Mol 2002). Different versions however, may contradict, interfere with one another, or go together (Moser 2006; Asdal 2012).

In the first part of this paper I will sketch out, provide snap-shots, of three versions of milk: a bacteriological, a nutritional, and an economic version. From here the paper continues and argues that these different versions had implications for another version of milk, namely mother’s milk: The argument is that these versions together took part in enacting what I name “a relational space” (Asdal 2011) through which “mother’s milk” was enacted as “natural”: At the turn of the twentieth century mother’s milk was enacted as “natural” in relation to other versions. In approaching the milk issue in this way I simultaneously propose that we need to get closer to the object “milk” that was the concern to scientists, but also other social actors at the turn of the twentieth century. How was this object “milk” being enacted in different practices – or put differently; what kind of object was “milk” turned into? Hence, it does not suffice to deal with ideologies (for instance of motherhood), with good norms or bad interests, we also need to relate to the objects. The argument is that in trying to grasp how the object “mother’s milk” was enacted as “natural,” we need to take other, and related, versions of milk into account. More precisely, the paper suggests that the naturalness of mother’s milk was not only shaped within medicine or within only one version of medicine: It was enacted within a relational space of different versions of medicine – as well as within a version of the economy: the free market.

Demonstrating the different versions of objects is an analytical task in its own right (even if it certainly could have been done in more detail and with more sophistication than I will be able to do in the snap-shots that this paper will provide). However, the objective of this paper is not only to analytically demonstrate three distinct versions. Rather it seeks to pursue a more transformative approach: How these versions over time came to play a role in a further stabilization and ensuing naturalization of mother’s milk.

The second part of the paper will attend more closely to such a transformative approach, which I will simultaneously argue represents a challenge to the turn to ethnography in the field of social studies of medicine. How are different versions unified and drawn together?

The archive as a field for exploring practices: The challenge of history to science studies

A prominent feature of the turn to the study of “medicine in practice” has simultaneously implied a turn to ethnography. As the ambition was to grasp the making of science (or other entities such as the patient – see e.g. Mol 2002) in action (e.g. Latour 1987), this is not surprising. Moreover, with the increasing focus on multiplicity,

different versions that are enacted in real time practices so to speak, it is as if this is sometimes already sufficiently complex to handle. As Mol and Berg have put it (1998), there are many different times within the present. Hence, the version of time that has to do with the past is not so much being addressed. Sometimes this turn to ethnography is also explicitly argued for (Mol and Law 2004).

On the one hand we should take care not to establish firewalls between doing ethnography and doing history, at least this is what this paper defends. Firstly, the archive, or more broadly the textual materials that historians work with, can be approached as a form of field from where we as historians seek to tease out the practices of the past. Hence, “the archive” is the historian’s version of field work. And even if historians can be said to often be more concerned with exploring the archive for the purpose of disclosing “what” happened, there is nothing in principle against redirecting the focus more towards “how” objects are enacted – and with which effects for the practices in question. Objects are enacted in written materials too. Secondly, what is the past anyway? Already yesterday’s paper is a document from the past. Reading practices from textual material is not something that is exclusive, or ought to be exclusive, to historians. Hence, there are ample opportunities if we are interested in meeting the challenges to the study of medicine seriously – as these have been posed in recent contributions within science studies.

Nevertheless, “history” represents a challenge as well as an important resource to the prominent turn to ethnography in science studies. Firstly, as already alerted to above, “history” is not so often dealt with – or if it is, it runs the danger of being performed as a flat context or “background” to the real and multiple events going on in contemporary practices. Hence, “history” easily becomes a “unified” or a relatively uniform past. But just as much as there are many different versions of time within the present, there are many different versions of time within the present of the past (Asdal 2012). Hence, the turn to multiplicity and the doing away with “unities,” ought also to include the past.

History represents a challenge also in the opposite direction. To put it quite straightforwardly and maybe too simply: Whereas ethnography may be eminent in analytically teasing out the ways in which different versions of objects are enacted in practice, history may be more sensitive towards the fact that not all versions develop equally or are equally sustained over time: Different versions of objects are transformed in practices from one instance to the other. Over time a version may become stronger, or it may wither and pass away. Moreover, different versions may be drawn together and unified. This suggests that we also ought to address the layering of objects into possibly increasingly prominent, and in the end, naturalized objects.

In principle there is nothing against pursuing such a “transformative approach” in science studies. On the contrary, and as I have argued elsewhere, the actor-network theory approach that the turn to ethnography draws from represents an underexplored potential for historicizing (Asdal 2012). However in practice a dynamic or a profoundly historicizing approach where objects are being modified and transformed – and then

explored – with the intent of demonstrating the effects of these objects, has not been the predominant task and approach. In attending more closely to the work of Theodor Frølich, the second part of the paper will attend more closely to this issue.

We saw already how Frølich was actively engaged in the milk issue early in the twentieth century. Despite the fact that Frølich came to be the leading figure in Norwegian pediatric research, was the co-author of the famous paper that came to establish the cause of scurvy, and was seriously engaged in the milk-issue, his work and research has to a very little extent been the object of historical research. This can be seen as part of the situation described already above: When health and the milk issue have been investigated this has not been done with a primary focus upon medicine, pediatrics, or the medical professions more broadly.²

Important and significant contributions on infant care though have come from other perspectives and scholarly traditions, more directed towards women's history. Hence, medicine and the role of medical doctors have not been the main issue. However, to the extent this *has* been included *care* has tended to be seen as the opposite to medical expertise and technology. “Instrumental rationality” and “technically limiting rationality” have been contrasted with a distinct “care rationality” and “responsible rationality” (Blom 1988; but see also Helsing and Haggkvist 2008; and Jakobsen 1988). The latter is grasped as practically oriented and linked to women's own or midwives' competence in opposition to the other more abstract (theoretical) and scientific approach.

In this respect this scholarly tradition and approach can be said to exemplify the lack of “dialogue between (celebrating) studies of motherly care and devastating studies of paternalist doctors” – that recent contributions argue has been prevalent (Mol, Moser, Pols 2010). Rather than exploring the devotion or the generosity with which doctors have engaged in caring, the story has been one of social power, the status and the salary that followed the rise of the medical profession (*ibid.*).

However, the “power-approach” to the study of professions may not be as dominant as it used to be. Other more open, practice-oriented and institution-dependent approaches have been suggested (for an early overview, see e.g. Halvorsen 1995). Already in her paper on the medical doctors' approach to women's pregnancy and infants' nutrition, Martinsen (1987) questioned the power approach to the study of the profession for the benefit of more openness towards the content of their practices and medical advice. Could it also happen that rather than strictly representing an instrumental and close to oppressive approach, medicine and its practitioners can also be seen as *care givers*, as practitioners of care?³ If that is the case; we need to be more

² See, for instance, Collett 1937: “The new specialty – pediatrics – has in the last human age saved millions of children from illness and suffering” (my translation).

³ Martinsen has in her later work been particularly concerned with the notion of care and has been one of the really significant contributors to the discussion on nursing and care in Scandinavia (see for instance Martinsen 2003). For a more recent historical work in the Norwegian context, see Druglitrø 2012 on skilled care.

specific: Care in what sense and with what content? Put differently: which version of care is it that we can analytically tease out from the practices and materials that we study?

Exploring this is the third objective and third part of this paper. Analyzing expertise from the hypothesis that medicine may involve particular practices of care is important, I will argue, to be able to grasp the possibly distinct as well as shifting versions of care. It is also potentially fruitful when it comes to enabling an understanding of how the Norwegian milk issue came to develop so differently from how the milk issue developed, for instance, in the United States.

What this paper will suggest is that the Norwegian way is linked to the enactment of a distinct version of care, a dis-passionate [*sachliche*] medical care and a pragmatic approach towards how to successfully make one's way "back-to-nature." However, as the paper will attempt to demonstrate, integral to this is the fact that mother's milk was enacted as the supreme interested object (Asdal 2011) to the extent that the medical approach implied only one best solution, i.e. "the natural" way. Hence, a distinct version of care and a distinct version of milk were enacted together.

The rest of this paper will be unfolded in three steps: First an outline of three versions of milk, then an outline of an increasingly stabilized version of mother's milk, and then how a distinct version of care and a distinct version of milk were enacted together into what I will label an interested object.

A nutritional version: The non-nutritious milk

Let me start with milk as a nutrient – while at the same time staying with the young pediatrician Theodor Frølich (1870–1947). In the history of medicine, Frølich is not known as much as an *individual* as he is known for being part of a team. In 1907 he published a paper together with Axel Holst, professor of bacteriology and hygiene, (Holst and Frølich 1907), which is now seen as a pioneering paper in its field because they succeeded in experimentally producing scurvy in guinea pigs (Carpenter 1993). Through a series of feeding experiments, the two researchers concluded, quite provocatively for many, that scurvy was a deficiency disease caused by erroneous nutrition. Hence, rather than seeing scurvy as a form of poisoning or an infection, theories that were both prevalent at the time, the disease was linked to the deficiencies and potential properties of food itself.

The authors argued that what the feeding experiments demonstrated was that certain foods had certain anti-scorbutic properties (what later would be defined and named Vitamin C), a capacity that prevented the disease from developing. In this way, Holst and Frølich can be seen as contributors to the larger transformations in the approach to food in this period: The relevant issue was not only the quantity of food, but the very properties of different foodstuffs (Kamminga and Cunningham 1995). However, at

the time neither their methods (feeding experiments) nor their conclusions (regarding scurvy) were fully recognized and were even highly contested in their own local professional environment in Kristiania (Asdal, forthcoming).

To Frølich these feeding experiments were nevertheless to have major significance for his way of approaching and perceiving the milk issue. Because interestingly, in trying to detect the cause of scurvy (or beri-beri as the enigma Holst initially was trying to solve), milk and milk-related products were introduced as part of the feeding experiments. This already may alert us to the significance of milk, which quite recently had become an everyday product in ordinary people's diet. In fact, this was the period when the Scandinavian milk consumption pattern was established and milk became an integral part of the ordinary meal (Hirdman 1983; but see also Jönsson 2005).

Already in the initial 1907 paper, the milk-connection was pointed to, in two ways: On the one hand the feeding experiments led the two authors to conclude that a diet of "different food stuff produced from flour" contributed to symptoms of scurvy. On the other hand the experiments indicated that also boiled milk was part of the problem.

This already points to the fact that "milk" as a nutrient was not necessarily to be equated with fresh milk: Milk could be part of the diet after having been boiled, or flour could be an essential ingredient in products that were "simulating" milk, such as flour-based nutrients for infants.

When it comes to the milk issue, it is Frølich more than Holst that ought to interest us. Even if it was his senior, professor Holst, who had been pursuing the work on beri-beri for a long time, Frølich's research must be seen as key to the 1907 paper. In his work Frølich was particularly concerned with the so-called Barlow's disease (e.g. Frølich 1905), which also went under the name "infantile scurvy." In the research on Barlow's disease, "milk" was to play a significant role in the non-nutritious version of milk. To get a better hold on this, we must attend to how Frølich came to build on his research with Holst and pursue further feeding experiments on the guinea-pig, the animal which had enabled the promising results on scurvy. In their feeding experiments on guinea pigs, the two researchers had observed that scurvy often emerged following a long and unbalanced nutrition on "flour-based products." In his own research Frølich had observed the same in infants when they, over a long time, were given what he called "flour-based products" [*melpreparater*].

Following from this Frølich decided to examine experimentally whether this could also be the case with animals who were nurtured on milk that had been heated to a high temperature for a long time. While this issue had been raised in his earlier work with Holst, it had not been examined in detail. In reinforcing his arguments in his paper reporting on the meeting of the Medical Society in Berlin and the problem of Barlow's disease, Frølich (1910) now pointed to the striking fact that the outbreaks of infantile scurvy and the later year's efforts to manufacture an improved artificially produced children's food appeared to be inter-related. The increased frequency of the disease seemed to be linked to the efforts to produce the various milk substitutes so

that these, both chemically and bacteriologically, were as close to mother's milk and as sterile as possible.⁴

According to Frølich, scurvy was only found in what he characterized as "artificially nurtured children." However, even the most serious cases of the disease were easily and quickly cured, either by giving the child raw milk or by providing rich amounts of other non-boiled nutrients, such as fresh vegetables, lemons, or other fruit. Barlow had already at the end of the nineteenth century pointed out that this disease, which was to be named after himself, emerged from a diet that over long time had been composed of so called "preserved foods" [*presærverede fødemidler*]. But what was the more precise cause of the disease? This was the enigma Frølich aimed to solve. His chosen approach was to undertake a detailed investigation of the infants' diet before the outbreak of the disease. These nutrition regimes were sorted into three categories:

First came one of "the many available flour-based products for children," industrially produced with various sorts of flour using chemical additives to facilitate digestion for the children. To exemplify this, Frølich pointed to all the classical brands on the market, such as Nestlé, Mellin's food, Allenbury, as well as various malt-extracts. He referred to the fact that incidents of the disease were well described in the United States where these "expensive products" were widely distributed among well-off families. Thus, this was not a poor man's disease, rather the opposite. However, these findings agreed well with Holst and his own earlier research on dietary experiments where guinea pigs were fed flour products.

Then, second, came the so-called "milk preparations" [*præparater*] that were produced from ordinary cow's milk, but then transformed into a qualitatively different product, for instance condensed milk, or plant milk. This second category was more or less identical with the third, children who were nurtured on pure or diluted cow's milk which had been well heated.

Frølich had not observed the disease in children nurtured on raw cow's milk. It therefore seemed legitimate to assume, Frølich reasoned, that the problem was linked to the heating process itself. This process appeared to transform the milk so that it became an unsuitable source of essential nutrients: The longer the heating, the stronger and more extensive the changes in the properties of the milk.

Experiments on guinea pigs with the objective of examining this question more closely led to the conclusion that it was highly likely that this transformation occurred because the antiscorbutic agents in the milk were destroyed in the heating process. Hence, an answer to the problem that had been raised at the Berlin conference of why infants who had been nurtured on heated milk tended to develop Barlow's disease, was found in Frølich's experiments. Based on these experiments, well heated cow's milk was understood to be of a deficient quality. The very same was the case with the

⁴ Here Frølich employs the notion mother's milk [*modermelk*] but other places in the same paper he employs the notion women's milk [*kvindemelk*].

artificially produced milk, sold at the American, but also at the Norwegian market (see e.g. Brinchmann 1909).⁵ Together the two milk products were enacted as a deficient and non-nutritional version of milk.

But milk was also a potentially healthy and nutritious form of food. Cow's milk was not problematized as such as a food for infants – as long as it was served raw, i.e. unprocessed. So why was the cow's milk heated? In order to answer this question we need to attend to another version of medicine that had become crucial to late nineteenth-century public health and medicine, namely bacteriology. In order to grasp more layers of the milk issue we need to attend to bacteriology and the implicated version of milk: the potentially decaying and contagious milk.

A bacteriological version: The potentially decaying and contagious milk

Starting from bacteriology, “milk” was not grasped as a nutrient with possible disease preventing effects (re: the antiscorbutic properties). As we will see, bacteriology rather enacted milk as a carrier of potentially deadly diseases. This is intimately linked to the fact that the milk issue was far from only a theoretical or academic problem. In Kristiania, as in other large cities (see Hirdman 1983; Atkins 2010; Steere-Williams 2010), a series of so-called milk epidemics emerged in these years. In Kristiania the incidents were subjected to a range of concerned discussions, not to say controversies, referred to in detail and in full length in the medical journals as well as in reports from discussions in *Det Medicinske Selskab* [the Medical Society]. Already the fact that outbreaks of diseases among certain neighborhoods in the city were conceptualized as milk-epidemics; i.e. that the diseases were specifically linked with a particular object may be related to a new way of approaching diseases. These disease-outbreaks were not, for instance, linked with theories of miasmas that were floating freely in the soil or in the air – potentially present everywhere. On the contrary, this was being related to, in principle, identifiable agencies (bacteria) that were potentially carriers of diseases.

The obituary of the medical doctor and professor at the University of Kristiania (now Oslo), Ernst Ferdinand Lochmann, pointed out that Lochmann already in 1859 had identified a particular dairy as the source of an outbreak of typhoid. This is early, but not in itself surprising. As demonstrated by Hardy (1993) and Steere Williams (2010), this way of linking diseases like typhoid fever to milk was established practice before the introduction of bacteriology. This was related to a field-based observational approach that later was to merge with the bacteriological framework. Lochmann, as it was said, had not been “realistic enough” to single out the milk itself as the source of the disease (Anon. 1891). However, half a decade later this link was prevalent. As

⁵ The first Norwegian factory for the production of condensed milk had been established already in 1875. Nestlé was the dominant actor in the Norwegian market (Espeli, Bergh, and Ronning 2006, 31).

the city veterinary official formulated it in a debate in the Norwegian Medical Society in 1908: “Any practical man knows the extent to which hygienic principles can be practised in a cowshed” (Jacobsen 1909). And as he added, the filtering of the milk would not have much impact on the prevalence of bacteria, but contaminants like cow faeces, hair and skin tissue could be eliminated. Hence, filtering was not sufficient. Milk did not only represent a problem because it could be observed by the human eye to be dirty, it was also potentially dangerous as a possible carrier of contagious bacteria invisible to the human eye – thus a source of diseases, for instance tuberculosis (see also Dwork 1987).

This “new realism,” to use the above Norwegian author’s words, had been enabled by experimental work linked to such researchers as Robert Koch and Louis Pasteur, who – aided by new visualizing techniques – had helped make new bacteria “real.” In 1882, for instance, tuberculosis was linked to the tubercle-bacteria and then convincingly established as a contagious disease (Gradmann 2009). Koch argued that tuberculosis could indeed be transmitted not only between humans but also from animals to humans through the ingestion of meat or milk (see also Rosencrantz 1985). Even if Koch later changed his mind on this issue, others, such as the Norwegian government and the veterinary director Ole Olsen Malm, maintained this assumption (Asdal 2006).

Outbreaks of a disease were accompanied by an intense hunt for the “source” of the disease. That milk could be the source was also more specifically linked to the fact that this was a fluid that was being transported over wide distances – and widely distributed. The second half of the nineteenth century had resulted in a major transformation of Norwegian agriculture, as in the other Scandinavian countries (Jönsson 2005). For Norway, one of the consequences was that the production of milk had become the most important form of agriculture in large parts of the country (Espeli, Bergh, and Rønning 2006). However, agricultural products did not only flow *out* of the country, milk also flooded, in large quantities, *into* the cities. Before the transportation revolution, milk could not be transported over long distances and still be consumed as a fresh product (see also Hård 1994 on the significance of refrigeration techniques, and Jonsson 2005 on the separator). Consequently milk was not commoditized to any large extent. From the mid-nineteenth century on, this changed. At the same time, farming was on the move from inside the city borders and out into the countryside. Hence, new and improved technologies and ways of communication enabled the flow of milk to circulate from the countryside to a growing population in the cities which was increasingly both willing and able to pay.

This also had to do with the fact that milk was being heavily promoted and sold from hundreds of different retailers, ranging from large commercial actors to individuals who sold milk from their own home (see e.g. Brinchman 1914). However, as the situation was presented by one of the actors in the public debate: before the milk was presented to the customer, it had not only been on the move, but also replaced, filled and refilled into new containers a series of times (Bentzen 1909).

Hence, the possibilities that the milk could become a source of infection were legion.

In 1887, for instance, there was an outbreak of diphtheria in seven families that had received milk from a farm in the western part of Kristiania. The assumption was that the disease had been transmitted through the milk (Flateby 1979). The incident together with the realization that the high infant mortality in the city could be linked with poor milk hygiene, led to an extensive inspection of milk outlets throughout the city. Nevertheless, soon after another incident occurred when in 1890 an epidemic of typhoid fever broke out among well-off families in the best part of town, the source of the epidemic was assumed to be milk bought from a nearby farm (*ibid.*).

A few years into the twentieth century, another incident, which developed into a veritable “milk-war,” occurred. The controversy was intimately linked to the efforts of deciding who was the guilty party, with potential consequences for which part of society was to blame and what efforts should be taken. In this case, not only geography, but also social class became important in order to localize the cause of the disease. According to what the city medical officer Bentzen had been informed, the disease was almost exclusively to be found in the western parts of town. A few families also on the eastern part had been affected, but these seemed to have connections to people in the western part (Bentzen 1909). Quite quickly, it was reported, both medical doctors and the general public had started to suspect that the infection was stemming from the milk. Remarkably many of the families had received their milk from the same dairy. As further support for the case that this actually was a milk-epidemic, Bentzen referred to one of his own patient groups, those on public support. He pointed out that despite the fact that precisely this group lived in that part of the city where the disease had emerged, not a single case of the disease had been discovered. But, as he added, this group of people probably would not have the economy to keep themselves with “such fine milk” [*slik god melk*] as they were talking about in the actual case (*ibid.*). Then the more specific question was: From where had people contracted the disease? Was the reason behind the disease outbreak a sick cow and an infected udder, or on the contrary a dairy maid? The various reports, suggestions, and convictions were many and partly conflicting (see e.g. Aaser and Malm 1909 and Ustvedt 1909). But the new bacteriology and the disease outbreaks that over and over again were associated with the widely circulating milk, together took part in enacting a version of milk as a potentially decaying and contagious object.

An economic version: the unruly and free-market milk

The milk market of the late nineteenth and early twentieth centuries has been described as “close to a perfect market” (Espeli, Bergh, and Rønning 2006). The market actors were many; in Kristiania in 1902 for instance, there were about a thousand milk shops (Flateby 1979), none of them big enough to control the market. Moreover, regulations

were few – if any. A closer look at the milk market in Copenhagen a few years earlier, in 1897, provides a vivid picture of this free-market situation: The daily consumption of milk in Copenhagen that year was about one hundred thousand liters, thus one-third of a liter per person (Ørum 1897). The sale of milk was to an increasing extent provided by big companies, but there was still a large diversification and the market was highly segmented.

The largest company, Copenhagen Milk Provider [*Københavns Mælkeforsyning*] was a philanthropic enterprise which had been established in 1897 at the initiative of medical doctors who wanted to provide healthy, pure milk. The company's philosophy was to have strict control of the livestock that produced the milk. Other larger companies were, for instance, the Milk Provider Pasteur Ltd. [*Aktieselskabe mælkeforsyningen Pasteur*], a company which provided only pasteurized milk. Thus, the name of the French bacteriologist Pasteur was in itself a form of branding, an attribute of the milk which differentiated it from other kinds of milk.

The Danish Milk Company [*Det danske mælkekompanie*] operated in a different way: All its milk was provided from one part of the country, about 25,000 liters a day. Here the milk was pasteurized and then frozen before being brought to Copenhagen. The Copenhagen Dairy Ltd. [*Aktieselskapet Københavns Meieri*] should also be mentioned in this context. Their form of branding was the introduction of a veterinary control of their products. Hence, relevant professional control was the differentiating factor. Finally, a political party, the Social Democrats, had also established its own joint stock company, with the significant name The Consensus [*Enigheden*]. The background for this initiative was obviously not so much the milk in itself as the people who were involved in its sale and production. The company had been established to provide work to those who had lost their jobs at another milk company because of a failed strike (Ørum 1897).

The marketplace for milk was one where the individual consumer chose the product according to preferences and affordability. Hence, milk was a socially stratified and a class-divided product. But to what extent was milk to be left to the free market? That was the on-going discussion among medical doctors and public health authorities, in Norway as in the other Scandinavian countries (see. e.g. Hirdman 1983). In what ways should the market milk, the circulation of the milk flow, be organized and controlled?

The prominent head of The Norwegian Medical Association and colleague of Theodor Frølich, Axel Holst, argued in favor of ensuring that milk from various sources was not mixed together. Without this "mixing," it was reasoned, it would be easier to find the source of infection. Holst argued that if they were not able to enforce such a ban on the dairies, they should rather initiate a campaign with the slogan: "Down with the dairies!" (Holst 1909).

Despite the above slogan, the profiled medical doctor and professor was careful, as were most others, not to demand measures that were too radical. As to the question of introducing measures to prevent future outbreaks of epidemics, the opinion was

that this should be done on a voluntary basis and only by increasing the sense of responsibility among the dairy farmers.

Holst for example did not have much faith in new laws or regulations (*ibid.*, 145). Perhaps the veterinary director Malm was right in characterizing his colleague in the following ironic way: “Mr. Holst as the dark pessimist: What is the point of it all? Everything is misery and emptiness: Black in black and negativism. Regulations have no effect, regulation by law is impossible and the control system inadequate” (Malm 1909).

However, in practice, the veterinary director very much shared the above position: The question was how to *defer* from intervening, or how to avoid regulations, in relation to agriculture as well as the milk market. The health-authorities and the medical profession upheld the market as a sphere of society that they (largely) restrained themselves from intervening in. This seemed to be the general position – out of consideration for the producers as well as consumers. The medical doctors seemed to be working to sustain a free market, and milk was made an integral part of the era of liberalism. In practice milk continued to be a relatively unruly free-market entity until the 1930s.

Drawing versions of milk together: The relational space for the natural mother's milk

The three versions of milk outlined above – the nutritious raw milk, the potentially contagious and decaying milk, *and* the free-market milk – all contributed to constituting mother's milk as the “natural” alternative. Mother's milk could be served “raw,” and in contrast to the market sphere, the home sphere lent itself far more easily to the advice and interventions of the health authorities, the paediatricians. In its intimate connection with the home and the mother, mother's milk appeared as the safe and far more governable alternative. Whereas the market was unruly, the home was a far more governable space. It is worth noting, nonetheless, that it was not so much the mother's milk in itself that was the issue, but rather the deficiencies or shortcomings of the alternatives. The alternative versions of milk together provided a relational space through which mother's milk could be enacted as “natural.” Hence, the three distinct versions of milk interfered with one another in the making of a natural version of milk, i.e. mother's milk.

As pointed out in the introduction to this paper, one of the significant features of the Norwegian situation is that the active promotion of breastfeeding as the natural way, and only good alternative, prevailed – and was even reinforced. In order to get closer to how this happened we need to follow the milk into the twentieth century. The strategy for doing this will be to follow closely the arguments in the scientific papers, textbook material, and other publications that Frølich authored.⁶

⁶ I base my analysis on the textbook published in 1924, in which Frølich outlines his position (Frølich 1924), as well as the subsequent edition (1938) and the second edition of the Nordic textbook on pediatrics published in

I will seek to demonstrate how the various layers of milk-versions were actively drawn together in a way that reinforced the promotion of mother's milk and further problematized the alternatives. Then next, these versions of milk were to be added with another one: A biological version that enacted a relational and species-specific milk. Whereas the former versions constituted milk as a potentially problematic object (because of being deprived of its positive properties, because of being contagious or non-regulated) this latter version was to be concerned with the *positive* properties of milk. Hence, the properties of mother's milk was to be explicitly addressed, as was the constitution of the infant. Consequently, the division between the artificial form of nutrition and the so-called natural way was being solidified. With Ludwig Fleck (1981) we might say that the mother's milk as the natural alternative developed into a thought style: a directed form of practice, linked up with a series of procedures and material arrangements that enabled the relevant object to emerge (but also potentially restricted what could be seen).

Artificial versus natural versions of milk: The disease-inducing artificial nutrition

In 1921, after having worked as a medical doctor at the University Hospital and with Axel Holst at the Institute of Hygiene on their joint experiments on guinea pigs, Frølich replaced his former senior, Johannessen, as professor of paediatrics at the University of Kristiania. At the same time he became the chief surgeon at the University Hospital. Hence, Frølich had the important position of teaching medical students on the theories and practices of infant diseases and infant nutrition. Probably he was also a practicing paediatrician with his own clients, as this seems to have been the standard procedure. And not only did Frølich teach students, he also wrote a number of textbooks in the field of paediatrics.

If we use the teaching materials as a way of exploring the milk-issue, we learn that the two aspects of paediatrics, infant diseases and infant nutrition, were drawn together and coupled in a significant way: Firstly, according to Frølich it was crucial to understand the role of natural nutrition for infants if one was to fulfill one's duties as paediatrician. This was relevant both when it came to treating the individual infant as well as in his capacity as advisor to the family (Frølich 1924, 17). Secondly, according to Frølich, most infant diseases were coupled with nutritional problems, and then particularly problems caused by so-called "artificial nutrition." One of Frølich's main concerns were the so-called "nutritional diseases in the early infant years," in other words, diseases caused by

1945, *Nordisk Lærebog i Pædiatri* (Frølich, Lichtenstein, and Monrad 1945), and partly also the different version of the Danish textbook (Monrad 1925) and the later version (Monrad 1945).

what was understood to be “erroneous nutrition.” To Frølich, as to his former senior Johannessen (1908), “erroneous nutrition” equaled artificial nutrition. As Frølich now phrased it: “practically speaking this is the artificial nutrition.” The “natural form of nutrition with mother’s milk” was understood as the key to infant growth and physiological development (Frølich 1924, 69–70). Hence, here it is not only the inadequacies and shortcomings of the *alternatives* to mother’s milk that are constituted as the problem: The focus is more directly on the properties of the mother’s milk. This would only be reinforced as more attention was given to the so-called species-related milk.

This is not to say that the shortcomings or failures of artificial milk were left unaddressed. Two major shortcomings were underlined: on the one hand the essential deficiencies of artificial milk and on the other hand the problem related to milk being a possible source of infection. On top of this the constitution of the child itself was brought into the picture: The constitution of the child might influence the child’s capacity to resist the detrimental effects of artificial nutrition (Frølich 1924, 74).⁷ In conclusion, the one and major factor to acknowledge and the situation upon which the practicing physician was to act was the artificial nutrition’s detrimental effect on the infant (Frølich 1924, 74). Interestingly, this means that the valuing of so called natural nutrition, was being intimately linked to what it meant to be a good paediatrician. How had this version of the problematic artificial milk emerged in Frølich’s work? As we saw already from the version of milk with which I introduced this paper Frølich had started to work from a nutritional approach to the so-called infantile scurvy, or “Barlow’s disease” – which later became a key to the breakthrough on the scurvy issue in company with Holst. Hence, infantile scurvy and scurvy proved to be the same disease. To Frølich these insights seem to have become the path that was to fundamentally form and inform his ensuing research and approach to the issue of infant nutrition.

The now established facts about the causes of disease had, according to Frølich, “shed light on the deficiencies characterizing artificial nutrition compared to natural nutrition” (Frølich 1924, 128). But then he took this further: the established facts about the pathology of *this* specific disease (e.g. Barlow’s disease) led Frølich to believe that a number of *other* pathological conditions in the infant were also caused by similar deficiencies linked to artificial nutrition. The only problem was that at this stage one did not have sufficient knowledge to be able to differentiate between these diseases (ibid.).

⁷ My strategy here is to follow the arguments in the textbook material and other materials closely. Hence, this is not to say that Frølich was the only one arguing in this or related ways. The argument above for instance can be seen as part of a transnational debate on pediatrics. In this particular case Frølich was probably inspired by the work of the Austrian Adalbert Czerny who was particularly concerned with infants’ “constitution” and who also, like Frølich, published textbooks on infants’ nutrition (see Schiff 1956).

Hence, not only *present* knowledge but expectations for the future, expectations of what the established nutritional framework and the concept of deficiency diseases would come to bring, now contributed to enacting the artificial nutrition as a major factor, perhaps *the* major factor, in causing diseases in infants. It was underscored that when it came to outbreaks of infantile scurvy, this was exclusively found in children who over a long period of time (several months) had been given one of the many “flour-based products” available on the market, Nestlé’s flour, Mellin’s food etc., and powdered flour-based products, and also in some children who were nurtured on well heated milk or milk that had first been pasteurized and then heated. There were only a few exceptions to this rule. Another issue also had an impact: Whereas mother’s milk was close to sterile, cow’s milk contained a number of bacteria. The source was partly the cow itself, but also the cow’s environment and later on, the home. Even if many of these bacteria were relatively innocuous, others were definitely not – a fact that led Frølich (1924, 49) to associate the numerous infections which had given “sad experiences here with us.” Hence, the bacteriological version of milk continued to spill into the enactment of mother’s milk as the natural alternative. This may have been reinforced as efforts to interfere with the market never seemed to emerge in Frølich’s approach to the milk issue.

A biological version of milk: A relational and species-adapted milk

In the 1920s something changed: A specific biological factor was added to characterize and underline the advantages of mother’s milk: Mother’s milk was characterized as a “species-specific” nutrient. Hence, the biological relation between mother and child was put into focus. The same reasoning can be found in the Danish textbook, but in less detail, by Monrad (1925). Other factors were added to this, for example the way in which the infant’s body and mouth were shaped to enable the suckling of the mother’s breast. The milk itself was described as a way of strengthening the infant’s immune system. Hence, again this was about an assumed specific relation between the mother and the child. This link, Frølich reasoned, even had effects on the infant’s appearance. An infant who had been nurtured on its mother’s breast was generally a more healthy or sound looking child.

In 1945, in the second edition of a Nordic textbook on paediatrics (Frølich, Lichtenstein, and Monrad 1945), one of Frølich’s contributions was entitled “Nutritional diseases in bottle-fed infants.” Here it was stated in a more compelling manner than ever before that “the natural nutrition with mother’s milk – *the species specific milk* – is a precondition for children to grow and develop physiologically.” All the nutrients of mother’s milk were both qualitatively and quantitatively adapted to the needs of the infant, it was stated. Moreover, this milk was given to the infant in an environment adapted to the functioning of the infant’s digestive system.

This above argument was linked directly to animal experiments which had demonstrated that to take away only one vitamin from the diet could cause severe problems and diseases in the animal. Based on this, it was reasoned, it was quite understandable, how only a minor lack in the infant's diet over a long period of time could induce diseases (Frølich, Lichtenstein, and Monrad 1945).

Versions of care: A dispassionate and matter-of-fact version of care

As mentioned in the introduction, the promotion of mother's milk as opposed to different versions of cow's milk was in no way exceptional to Norway or Scandinavia at the turn of the twentieth century. In the US, the situation was much the same. In a publication from 1904, a leading paediatrician, Abraham Jacobi, expressed his views on the subject, arguing that "the inability or reluctance of women to nurse their own infants" was "a grave matter." From a physical, moral, and socio-political point of view there was, according to Jacobi, only one calamity that was still graver, and that was the refusal to have children at all. Both Jacobi (1904) and Frølich (1905) backed up their statements with references to nature. As Jacobi stated in a critique against the new formulas that had appeared on the market as substitutes for mother's milk: "We are beginning to learn that it is impossible to feed a baby on fanatical chemical formulae, for they are not prescribed by Nature."

To Jacobi, the inability or reluctance of women to nurse their own infants was a grave matter, not only because it undermined the health of women, but also because it made "family life a commercial institute or a desert, depopulated the child world, reduced original Americans to a small minority" and left "the creation of the future of America in the hands of twentieth century foreigners." Jacobi believed in what he saw as the "perfectibility of the physical and moral conditions of the human race." That was why he, as he said, trusted "that society would find means to compel able-bodied women to nurse their own infants" (Jacobi 1904, 15).

Related arguments were posited by Norwegian medical doctors: Women were to breastfeed out of concern for the human population and the family (Malm 1916). And as we saw, the paediatricians were concerned with the issue of infant mortality (see Frølich 1905, but also his senior Johannessen 1908). Hence, to them as well, the population was a concern and reason to advocate better nutrition for infants (see e.g. Johannessen 1908; Toverud 1946). This in turn can be understood in a Foucauldian (Foucault [1978] 2007) framework about shifts in governmental rationality where the family went from being a model for good government to becoming an instrument. Hence, the family became a means for achieving certain bio-political ends, for instance reducing infant mortality in order to strengthen the health of the population and the wealth of the state. A more open way of approaching this issue would be to argue that what was at stake was, to borrow a concept from John Law (2010), the care for a particular "collective," i.e. the infant population.

This framing of the family as an instrument is relevant and interesting in light of the ways in which the approach to breastfeeding and infant's nurturing has been analyzed in a Norwegian and more generally Scandinavian context.

But the question then is how? How was this caring for the collective done? And which collective was it that was being cared for? Perhaps, if we look more closely at the object and the collective that the paediatricians cared for, we see that they are not really the same and the caring was not enacted in near to the same ways?

When reading Jacobi for instance, it seems that the care for the collective in the form of the population overrides the care for the individual or the mother. Is an equal approach necessarily the same in the material that was developed for teaching Norwegian medical students?

A closer look at the material does give the impression that the approach involved in "going back to nature" rather appears to be what we might call pragmatic. To use the notion of care suggested by recent science-studies authors (Mol, Moser, and Pols 2010), the approach explicitly promoted by the teaching material resembles a form of "tinkering": This tinkering is not opposed to concrete advice, prescriptions, norms and rules and regularities, quite the contrary. Nevertheless, in order to achieve "the natural," attempts are made to adapt breastfeeding to the various and shifting situations in which the mother is a part. Thus, it is enacted as a relatively flexible and adaptable practice to be made integral to ordinary daily life.

It is worth noting that in this teaching material there is little reference to the population *per se*. More prominent is another collective, that of the collective of the mother and the child and the ways in which they may perform good feeding together. Hence, this collective is put forward more as a relationship, and from this material it is not at all obvious, as has been argued earlier (Blom 1988; see also Jakobsen 1988), that the mother is pushed into the background. However, it seems that the focus is not so much on a form of care predominantly concerned with emotional ties and relations.

What I would suggest is to describe the prescribed procedures, approaches, and interventions of the teaching material as a kind of *sachliche*, or matter-of-fact, care. This needs to be investigated further, but in suggesting this, I intend to link this version or genre of performing care with the *neue sachlichkeit* of this period, as this has been analyzed elsewhere within art and architecture (see Crockett 1999; see also Thue 1997). There is no accurate translation of this German and Norwegian concept, however, referring to this as a "dispassionate" or "matter-of-fact" form of care may be a fruitful conceptualization.

Nevertheless, there is one thing that is indeed worth noting in relation to this *sachliche* or matter-of-fact way of enacting care: As noted above, the positive evaluation of mother's milk had become a thought style (Fleck [1935] 1981). This implied that even if the way to the goal involved tinkering and pragmatism, the matter-of-fact approach nevertheless implied only one best solution: "the natural" way. Mother's

milk had developed into the supreme and unquestioned, version of milk.⁸ It had become an interested object: made increasingly real while at the same time being invested with interest, care, and concern.

Towards a conclusion

In order to get to the specificities of the thought style which took part in constituting a distinct version of milk, the approach has been to pay close attention to the relations through which mother's milk was enacted as the natural alternative. Moreover, I have paid close attention to the making of what I suggest be named a specific version of care, that is a dispassionate and matter-of-fact version of care. This is a version of care that makes the mother a key actor based upon the family model. The way back to nature was pragmatic, but "nature itself," the species-adapted milk, mother's milk, had nevertheless become the supreme interested object to which there hardly was an alternative.

Nature, or facts of nature, do not have much force alone; alone, facts of nature have very little impact. This means that if we were to really *explain* how Norway developed its distinct way, the practical advisory work undertaken by an array of actors, health workers, and midwives included, needs to be taken into account (on this point for the case of Denmark, see e.g. Løkke 1998). Thus the clients (or lay people) and the expert relations ought to have been studied in more detail. In this paper, the main objective has been to analyze how mother's milk was re-invented as natural and then how this naturalized version of milk was invented together with what I suggest be named a dispassionate and matter-of-fact version of care. In doing this, I have pointed out that even if the credo "back to nature" initially was the same both in Norway and the US, the suggested way back to nature took quite distinct and different routes. This paper has even suggested that the collective that was being cared for was not the same in the two different contexts. But the Norwegian case may have participated in producing what we now know as the specific Norwegian context.

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⁸ But see Toverud 1946 for a way of opening up the discussion if only a little bit. Toverud was herself a pediatrician who worked with Johannessen and Frølich, but did not earn a permanent position at the University Hospital and later moved to the US to work there. Her contributions and advisory work deserves a separate paper – but there is unfortunately too little space to go into this in more detail here (Frølich 2009).

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