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Doctoral thesis

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Norwegian University of Science and Technology
Thesis for the Degree of
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Contents

1.Introduction

Excerpt from my book *Of Cocktails and Penguins: A summer in Antarctica from behind the bar*:

> At the end of the Antarctic season our beer cans were slightly past the expiration date - let's say a month or two. Of course, every health and hygiene officer would have told me to get rid of this out-of-date beer and to buy fresh produce. Unfortunately, there is nothing like an "Antarctic supermarket" to restock while down south, so I had no other choice than finding a solution for selling over-date but not yet health-risk beer. I decided that from now onward, I would pour the beer into a glass and not hand out the can itself anymore – henceforth people would have to face the health and safety risk of handling glassware on a moving ship but would be left without knowledge of the health and safety risk posed to them by the content of the glass – like a reverse placebo effect.
>
> This method worked quite well (except for the continuous loss of precious glass) - until I was challenged by a passenger from Denmark who insisted on receiving the can with his glass. Upon seeing me twisting and turning each time he wanted his beer can, this Viking became suspicious. When I ran out of excuses and handed him the compromising item, he went straight to the bottom, where the good old date was printed, informing him that the beer had overspent its time in the fridge. Of course, he demanded a nice, fresh, not-expired beer. My problem was, we had none! However, telling tourists that we had run into the biggest fresh beer shortage south of the polar circle would have led to mutiny among them.
>
> Faced with this challenge I could not come up with a better solution than: *blink-blink-sorry-sorry-you-get-your-beer-for-free-for-the-rest-of-the-trip-as-long-as-you-don't-tell-anyone-smile-smile-blink-blink.* In the end all were happy: I could continue selling beer, Viking tourist got it for free (making him start drinking in the mornings) and the rest of the tourists were blissfully oblivious about the age of their drinks and not one of them got sick (at least not from the beer). (Plasil 2014)

My days as an assistant on-board manager and bartender on an Antarctic cruise ship are long over, yet this episode describes many of the issues surrounding date labelling. It shows how food is regulated by and valued according to the date label and, even though not explicitly, it hints at the connection between date labelling and food waste.

Food is ephemeral and perishable, it spoils, rots and withers moving from the realm of the edible and enjoyable to the realm of decay, danger and disgust. Being interested in food and eating and what makes food culturally and socially important (besides its obvious role as nourishment) led me to wonder: What happens when food stops being food? Or more specifically, who decides that food is not food anymore but waste and on what grounds?

As an anthropologist I was used to follow people, but why not follow "a thing" instead to find out how real lifetime of food turns into standardized shelf-life time and what this change means for the evaluation of a product? From there it was just a small step to making not a food item the centre of my study, but to look at the biography of the technology "date label" itself. Why and how was it created historically? By whom? How is it constructed and practiced along the food chain? And how can we deal with its consequences?

Science and Technology Studies (STS) with its focus on the interaction of humans with things, tools, and technologies provided a rich breeding ground for developing my ideas about the date label and shelf-life of food – both theoretically and empirically. In this thesis the date label is treated not as a "mere prop for social action" (Prout 1996: 199) but as an actor that actively shapes and is shaped by social processes and practices. The date label, *the little date on the package*[1], might seem like a simple, mundane and every-day technology but it has many functions and consequences. It standardizes the lifetime of food into shelf-life time and transmits information between food production and consumption, determining how food is evaluated, used and discarded throughout the whole food chain. The anecdote above shows, how strongly connected the date label is to our perceptions of safety, quality and value of food products.

To learn more about these issues I set out to open the *black box* (Latour 1987; Lampland and Leigh Star 2009) of the date label to uncover how it was *constructed,*

[1] Borrowing from Ritzer's «Little House on the Hillside" (Ritzer 2000)

practiced and what its *consequences* are. The three papers that form the backbone of this thesis describe and analyse why and how the date label was and is constructed and re-constructed not only historically but also through daily practice and policy making by different actors. The date label is taken as a technology worthy studying in itself but it is also a significant example of "how ordinary objects and technologies are made to speak for politics" (Woolgar and Neyland 2013: 3). Looking at the date label through history reveals how date labelling has moved from being situated exclusively in the realm of food regulation to being an important factor in environmental policies and quests for more sustainable production, retail and consumption. This thesis follows *the little date on the package* through time and space in order to describe and analyse these processes.

After this brief introduction, in the next chapter I not only present some necessary background information, but I also offer a short summary of each of the three articles. This is followed by a chapter on methods. Then I reflect on previous literature about the topic before presenting the theoretical toolkit that I used in the analysis. The three articles are found at the end of the thesis.

2. Background, context, summary – the three papers of this thesis

This is an "article based" thesis in which three articles, or papers, form the core of both the empirical and analytical work. Taken together they reveal (parts of) the biography of the *little date on the package*, describing and analysing the construction, practice and consequences of date labelling in Norway. Each paper describes and discusses, albeit not exclusively, one of these three aspects of the expiration date of food. This thesis follows the date label in two ways: through time and through space. Paper One is situated in the past and describes why and how the date label was constructed in the 1960s/70s. Papers Two and three focus on today's practice of the date label and on a recent attempt to make the date label more sustainable. Taken together these papers reveal how the date label moved from being exclusively a food policy regulation to being an environmental issue. Besides the historical approach I also follow the date label through space. Paper Two takes milk as an example and follows this food product and its date label throughout the whole food chain: *from the udder to the gutter*.

The reason for choosing the article-based format is two-fold. One reason is institutional. At the *Department of Interdisciplinary Studies of Culture,* writing an article-based thesis has become the standard approach and doctoral candidates are encouraged to follow this tradition. The second is topical. Having chosen the approach to follow the three topics of construction, practice and consequences almost "naturally" led to a division of the empirical data and theoretical resources into three separate papers. The advantages of an article-based thesis are several and span from having to present one's writings to scrutinizing and educative peer review at an early stage to having articles published before the end of the Ph.D. time.

There are, however, also disadvantages to this approach. First, the strict word count of publishing houses meant that I, at times, had to leave out interesting empirical material. Therefore, to make this thesis richer, I have added additional data in the analysis. Second, peer reviewers and editors often steer an article in a certain direction, meaning that also several theoretical ideas had to be sacrificed along the way while others had to be highlighted in order to satisfy their needs (examples are a focus on *black boxing* rather than

qualification processes in Paper Two and a focus on *translation* rather than *script* in Paper Three). Also, here the cross-cutting analysis elaborates more on some of the theoretical thoughts that fell prone to peer review. The third disadvantage is the challenge to connect the divergent topics, data and theories used in the papers into one congruent thesis. Therefore, I chose to place the papers at the end of the thesis to form a continuous line from methods, to previous research and theoretical resources towards the cross-cutting analysis before presenting the different articles each with their own method, theory and analysis.

However, before giving a short overview of my own findings, first some reflections about the pressing societal issue that forms the starting point of this thesis: the connection of date labelling to food waste.

2.1. Setting dates, generating waste?

Today most packaged food products must have an expiration date (European Union Committee 2014).[2] In Norway, the legal basis for the date label is found in Article 9 of the *Regulation of Food Information for Consumers* from 28th November 2014[3], no 1497. The regulation was issued jointly by the Ministry of Agriculture and Food, the Ministry of Industry and Fishery and the Ministry of Health and Care. Regulation 1497 is based on the *Law about Food Production and Food Safety* (*Food Law*)[4] from 2003. Both law and regulation follow the applicable EU Laws and Regulations (EF 178/2002 forms the basis for the 2003 Food Law and EU 1169/2011 guides the 2014 Food Information Regulation).

Regulation 1497 demands that the date label defines either a *use-by* date (*siste forbruksdag*) or a *best-before* date (*best før*). The date must consist of day, month and, if applicable, the year when a product expires. The *use-by* date is used for highly perishable products, for example fresh chicken or fish and refers to food security. Once the *use-by* date has passed food should not be considered safe for consumption anymore as the danger of food poisoning or foodborne diseases caused by microbes increases considerably - see for

[2] See *Regulation of Food Information for Consumers* from 28th November 2014. Exempted from the regulation are: fresh fruit and vegetables, bread and pastry products (which are normally used within 24 hours), vinegar, alcoholic drinks with an alcohol content above 10%, sugar, cooking salt or chewing gum.

[3] Forskrift om matinformasjon til forbrukerne

[4] Lov om matproduskjon og mattrygghet (matloven).

example the outbreak of E. coli O103 in Norway in 2006 (Elvbakken and Rykkja 2006). The *best-before* date is an indicator for quality, telling consumers that some of a product's properties (for example taste, smell, colour, texture, vitamin content etc.) might have deteriorated. It is generally safe to eat a product after the *best-before* date and in Norway and many other countries it is legal to sell products after the *best before* date has passed.

Date labelling was implemented in most Western countries in the 1970s and 1980s and since then *the little date on the package* has become completely entrenched in consumers' minds. It profoundly influences many food choices and habits and people have come to depend on it to the extent that the expiration date is often trusted more than one's own senses (e.g.,Tsiros and Heilman 2005; Abeliotis, Lasadiri, and Chroni 2014; Aschemann-Witzel et al. 2015; Stilling Bilchfeldt, Mikkelsen, and Gram 2015; Yngfalk 2016a; Lind Melbye, Onozaka, and Hansen 2018; Wilson, Miao, and Weis 2018; Mattila et al. 2018; Yngfalk 2016b).

This trust in the date label has been identified as being responsible for a substantial amount of household waste (e.g.,European Union Committee 2014; Norstat 2016; Elstad Stensgård et al. 2018). The research institute Østfoldforskning does regular surveys about food waste practices among food producers, retailers and consumers in Norway. The latest numbers show that consumers are responsible for 58% of all food waste in this country (Elstad Stensgård et al. 2018) and being out of date is an important reason for the discarding of many food categories (like fish or dairy products).[5]

Growing amounts of food waste are not just a Norwegian but a global issue. The FAO (The Food and Agriculture Organization of the United Nations) started the global Save Food Initiative[6] in 2011, which defines food waste as: "the discarding or alternative (non-food) use of food that is safe and nutritious for human consumption." According to the FAO food is wasted in many ways including: "foods that are close to, at or beyond the 'best-before' date, are often discarded by retailers and consumers."[7] Following this initiative the United

[5] It is unfortunately difficult to compare the data sets from the research 2010-2015 with 2015-2018 as questions have been altered and possible answers in the survey have been added. Especially the addition of the possible answer: "I forgot the product in the fridge" changed the statistics substantially as forgetting in the fridge could – among other things - also mean that once the product was found it had passed its expiration date. Therefore, one has to take the reduction of the date label as being responsible for 68% food waste among dairy products 2010-2015 to 16% in 2015-2018 with some hesitance.

[6] https://www.save-food.org/

[7] http://www.fao.org/food-loss-and-food-waste/en/

Nations made the fight against food waste part of the 17 *Sustainable Development Goals*[8] in the 2030 Agenda for Sustainable Development and which were adopted in 2015. Goal 12.3. states that by 2030 the per capita global food waste at the retail and consumer level should be halved. According to the UN the food sector accounts for around 30% of the world's total energy consumption and accounts for around 22% of total Greenhouse Gas emissions. Their website also states that each year not only an estimated one third of the food production is lost and wasted along the food chain but also that households influence the substantial environmental impacts in the production phase through their choices and habits.

The connection between a seemingly simple and mundane technology like the date label with large and global issues like food waste forms the backbone of this thesis. The expiration date is deeply embedded in consumers' minds and habits, but it is also central throughout production, transport and retail of food. Even though just 45 years old, the date label has influenced the processes and technologies along the food chain (speed of transport, packaging, conservation etc) and people's (not just consumers) perceptions about food safety, quality, value and waste in a profound way. Furthermore, the connection between date label and waste is the outcome of both historical and every-day processes and decisions taken by different actors (e.g., politicians, bureaucrats, product designers, marketing strategists, producers, transporters, retailers and consumers). These historical processes and actions left us with a *wicked problem* (Rittel and Webber 1973): quality or sustainability? This thesis, even though not solving this problem, contributes to a better understanding of the issue by presenting and analysing the construction, practice and possible dealings with the consequences of the *little date on the package.*

2.2. Paper One: "The (hi)story of the little date on the package – constructing and implementing the date label in Norway"

This paper is single authored and was originally written in English. It was then translated into Norwegian and this version, «*Det lille merket på pakken» - Historien om datomerking i Norge* will be a chapter in the book: *Den nye maten: Mat som industri og teknovitenskap, 1850-2016.* There is a pre-contract signed with Cappellen Damm Academic. The Norwegian

[8] https://www.un.org/sustainabledevelopment/sustainable-consumption-production/

version of the article can be found in the appendix, while the original English version of the text is found in the main body of the thesis.

In this paper I look at why and how the date label has been constructed and implemented as an intermediary between *field and fork* (Sassatelli and Scott 2001; Poulain 2017 (2002); Kjaernes, Harvey, and Warde 2007; Eden, Bear, and Walker 2008b; Zachmann and Østby 2011). In this mediating role the date label transmits information about food quality and food safety from the producer to the consumer by converting the natural lifetime of food into standardized shelf-life time. This had become necessary due to substantial changes in the foodscape of Norway after WWII. The supermarket revolution, a rise in imported and therefore often new and unknown products and the industrialization and marketization of food together with new packaging technologies (freezing, freeze drying, canning, vacuum packing etc) made it harder for consumers to evaluate and judge the freshness of products (Bildtgård 2008; Freidberg 2009; Olsen 2010; Zachmann and Østby 2011; Finstad 2013). Together with a rising awareness for the need for consumer information and the "empowerment of consumers" (Myrvang, Myklebust, and Brenna 2004; Myrvang 2009) this lead to the legal regulation of the expiration date in the 1970s. This was part of high-modernist ideas (Scott 1998) about the make-ability of society. According to Miller and Rose (2008) governing a state does not only consist of grand political schemes but governing in practice depends on humble and mundane technologies, for example date labels that translate the goals and ideas of those who govern into practical use. In this paper I then describe the long and disputed path that product labelling in general and date labelling in particular had to undergo before it was signed into law by *The Law for Labelling of Consumer Goods* of 1968 and the *Regulation for the Labelling of Consumer Goods* from 1975. By following the paper trail generated by these laws and regulations I present the different actors that were involved and reveal the varying ideas, goals and processes that went into the *black box* (Latour 1987, 1999) of the standardized date label. In this paper I follow the date label through time, in Paper Two I follow it through space.

2.3. Paper Two: "Black boxing milk: expiration date, quality, and waste throughout the Norwegian milk chain"

This paper is single-authored and has been published in *Food and Foodways* in February 2020 (volume 28, issue 1). In this paper, I follow milk from the *udder to the gutter*,

describing the different actors, practices, properties, technologies that on the one hand determine and construct the date label, and are on the other hand influenced and determined by their own construction. I argue that at the time of printing the date on the milk carton, milk changes from being an 'anonymous, timeless entity' to a 'packaged, traceable commodity' with a limited shelf-life. Natural lifetime is changed into shelf-life time. Callon et al (2002) describe how products pass through a series of "qualification processes" in which qualities are "attributed, stabilized, objectified and arranged". This happens at the time of printing when the standardized date label becomes the most important parameter for quality determination, hiding the many intrinsic properties (like protein, cells, bacteria) that went into creating the expiration date and were used for the evaluation of the milk before.

The milk carton thus becomes a *double black box.* The term *black box* (Latour 1987, 1999) refers to the simplification of complicated systems, scientific knowledge, mechanisms or objects, by focusing only on their inputs and outputs. The concept of the black box can also be applied to standardization processes like food packaging or labelling where "[…] ideas of quality and safety are condensed through material and semiotic connections and exist as a kind of shorthand reference to assemblages of persons, places, and production" (Tracy 2013: 440).

In the case of milk, the first level of black boxing happens in the laboratory, where the shelf life is determined. The second level of black boxing happens at the printing machine. Here it is that the date label becomes the most important tool for quality evaluation for the remaining shelf-life of the black boxed milk. By visiting several locations (farm, truck, dairy facility, supermarket, household and gutter) I describe not only how the expiration date is constructed by different actors through daily practice but also how the label in turn acts upon and influences its very creators and users. I furthermore problematize the connection between the date label and food waste. At each site there is the risk for milk being wasted due to the perishability of the natural product in combination with the strictness of the label but there is also enough flexibility within the limits of the expiration date to avoid it.

2.4. Paper Three: "Best before, often good after": re-scripting the date label of food in Norway

This paper is also single authored and has been published in the *Nordic Journal for Science and Technology Studies* (volume 8, issue 1). This paper takes one consequence (food waste) of the date label as a starting point and describes how the UN Sustainable Development Goals are translated into environmental policy and daily practice in Norway. Here the date label moves out of the realm of being exclusively a food policy technology and becomes part of environmental policies and efforts to make the food production and consumption more sustainable. By re-scripting the label on the food package from *best before* to *best before, often good after* an effort is being made by the food industry to reduce the negative impact the date label has on the sustainable use of food items.

According to Akrich (1992) technologies (in the widest sense) contain a script. This script is based on the assumptions and hypotheses the makers have about the future users, it is "inscribed" into the objects or technologies and "prescribes" a specific use and certain practices (ibid: 208). The date label can be conceived as a double script: it *is* literally a script, printed on the package but it also *contains* a script, prescribing a specific understanding and use. The script intended by its makers was to throw away a food item once the *use by* date has passed (as it is not safe to eat anymore), while after the *best before* date only certain qualities of the food items might have deteriorated and most food items could be safely consumed. However, this script was misunderstood by many consumers who blended the distinctive scripts into one and started relying on the date label more than on their own senses (Tsiros and Heilman 2005; Abeliotis, Lasadiri, and Chroni 2014; Aschemann-Witzel et al. 2015; Stilling Bilchfeldt, Mikkelsen, and Gram 2015; Yngfalk 2016a; Lind Melbye, Onozaka, and Hansen 2018; Wilson, Miao, and Weis 2018; Mattila et al. 2018; Yngfalk 2016b). In an effort to inform and educate consumers about the edibility of many food items past the *best before* date in order to reach the UN Sustainable Development Goals but also to green the food industry's image, many products are labelled with the supplementary, presumably more sustainable expiration date.

Closely following the process as it unfolded in the last years in Norway I show how this re-scripting of the date label not only translates global environmental goals into local policies and practices but it also reveals shifts among those responsible for these changes (from state to industry) and shifts in the discourses and ideologies behind them (from high-

modernist to neo-liberal). The supplementary date label is aimed at balancing two needs and issues at stake: the need for food safety and the need for a sustainable food chain. The label was modified relatively short before the time of writing, and at that time it was unclear whether the *little date on the package* will indeed be capable of managing this balancing act in the future.

2.5. From natural lifetime to standardized shelf-life

Date labelling is the technology that is central in all three papers and following it through time and space is the red thread that connects the different parts of this thesis. Taken together the papers reveal some interesting insights, which I will elaborate on in the analysis. What is central in all three papers is that the date label is a government technology that translates certain goals into a mundane and every-day standard in order to act upon the different actors (producers, retailers, transporters, consumers) along the food chain. The date label *is* and *contains* a script through which its creators anticipated and prescribed a certain use: *use by* for highly perishable and therefore unsafe products, *best before* for non-highly perishable and generally safe-to-eat products. Due to a misinterpretation and confusion of the two scripts, unsustainable consequences arose that the Norwegian food industry is attempting to mend by re-scripting the expiration date. Today the need for food safety and an ever-growing need for freshness compete with the need for a sustainable food chain. The date label is at the cross-roads between food policy and environmental policy, moving from one domain towards the other revealing changes in needs, actors, goals and practices. In the analysis I will describe and problematize these thoughts further, but before doing so I will first elaborate on the methods used to generate data before presenting several pre-existing studies, findings and theoretical resources on which this thesis builds upon.

3. Method

As the scenario outlined at the beginning of this thesis shows, there is a thin line that separates a food item from being edible to waste. This thin line can be negotiated according to situation, context, or time. Had it been a 'normal' bar, the out-of-date beer would have easily been replaced by a fresh one while the old one would have been discarded. Giving away the beer for free, however, shows how the drink in question had changed its value drastically due to being out of date. Furthermore, the well-being of the consumer proved that beer could be consumed (within reason) after the "little date on the package" had passed. This triggered my interest to learn more about date labelling and when, how, and why does food become waste. I followed the date label through time and space, trying to write the biography of a thing, a label, and a technology. The date label, its history, practice, and consequences, was central to my empirical venture.

3.1. Why follow things?

> Where does a thing come from and who made it? What has been its career so far, and what do people consider to be an ideal career for such things? What are the recognized 'ages' or periods in the thing's 'life', and what are the cultural markers for them? How does the thing's use change with age, and what happens to it when it reaches the end of its usefulness? (Kopytoff 1986: 66-67)

This thesis was inspired by *The Social Life of Things* (Appadurai 1986), particularly the idea that things, not just humans, also have biographies. Subsequent authors such as Czarniawska (2007) notice this as well: "[…], social scientists spent too little time on objects and too much time on humans, misled by the fact that humans can talk, and therefore can be spokespersons even for networks composed primarily of non-humans" (ibid: 92). She recommends that "following objects diminishes the risk of focusing merely on people and neglecting many other actants that form any network" (ibid: 106). Analyzing networks of human and non-human actors is central to Science and Technology Studies (STS). One example is Bruno Latour's account of the work of Louis Pasteur where he places microbes, machines, and humans equally (but in different locations) on the same map of investigation

and unravels a whole network of forces, like the public health movement, the medical profession, and even the colonial administration that led to the success of Pasteur. He uses history "as a brain scientist uses a rat, cutting through it in order to follow the mechanisms that may allow me to understand at once the *content* of science and its *context*" (Latour 1988: 12). The method he uses is "simply following all these translations, drifts, and diversions as they are made by the writers of the period" (ibid: 11).

For me, both Appadurai/Kopytoff and Latour were very inspiring when embarking on the journey of writing the biography of the date label. Things and technologies do not develop out of thin air, they are thought about, *constructed,* and put into place by humans according to implicit and explicit ideas and ideologies. They do not merely exist, they are used, put into *practice*. This practice and use have certain intended and unintended *consequences*. When starting to map out the first ideas for this project it quickly became clear that my research would be divided into the *construction, practice, and consequences* of date labelling of food.

After the date label was legally constructed as a *government technology* (Miller and Rose 2008) in the 1970s, it became a *black box* (Latour 1987)*:* locked and opaque, and accepted by consumers. By following objects one can unlock black boxes and peer inside (Czarniawska 2007: 100). Therefore, in order to understand how the date label was constructed by translating an issue (food safety) into a technology (regulation/label), which then is used and practiced all along the food chain, having severe consequences (food waste) I chose to follow the date label through time and space. This enabled me to unlock what is hidden inside and find out why food has a standardized shelf-life, which is often quite different from its natural lifetime. Furthermore, this approach enabled me to learn more about what the date label does to the actors along the food chain and how the expiration date could be used to address its consequence, food waste.

Latour (1988) suggests that we should be "simply following the translations, drifts, and diversions". However, it is not that "simple". To unravel what is hidden inside the black box of the date label and to write a comprehensive biography spanning from the past to the future, I chose to use a multi-sited and multi-methods approach.

3.2. A multi-sited and multi-method approach

Before making a case for a multi-method approach, I want to discuss some alternatives. Latour (1988) chose a single-method approach to write the history of the *Pasteurization of France.* He focused "simply" on the written word and analyzed three periodicals during one particular time: *Revue Scientifique* (1870-1919)*, Annales de l'Institut Pasteur* (1887-1919)*,* and *Concours Médical* (1885-1905)*.* He admits that: "Since the documentary material is limited to these three journals, my effort to explain bacteriology and French society simultaneously may be judged solely on this basis. Despite my search for complication, I find no more than this simple method" (ibid: 12). He furthermore limited the semiotic method that he used as basis for his research to the "interdefinition of actors and to the chains of translations" (ibid: 12).

Many other researchers, also in the food waste literature, build their arguments based on a single method or data set. Abeliotis, Lasaridi and Chroni (2014) for example describe attitudes and behaviour of Greek households regarding food waste prevention based on one standard questionnaire filled in by 231 consumers while Stilling Blichfeldt, Mikkelsen and Gram (2015) built their analysis of how and why consumers classify food as edible or not, solely on "relatively unstructured interviews" (ibid: 92) among middle class households.

Arguably a single-method approach has advantages. Having data stemming from a single method or source often enables a focused or in-depth interpretation, allowing the scholar to immerse him or herself completely into one set of data. Latour serves as a good example for this deep immersion into the data by using one single method (document analysis).

Furthermore, single-source data sets might be easier to compare than data generated from a wide range of sources as the research can be easier re-done at another point in time or another place using the same questionnaire/survey again. The questionnaire used by Abeliotis, Lasadiri, and Chroni could be re-used in the future or at another place for a useful comparison of attitudes. Also, often there is no need for using diverse methods. The analysis by Stilling Blichfeldt, Mikkelsen and Gram based on "just" unstructured interviews proves that focusing on a single method often is enough to deliver a revealing and comprehensive analysis of the issue in question.

In anthropology (my original training) traditional, one-sited, long-term, and immersive participant observation (Malinowski 1984 (1922)) used to be the preferred way of doing research. This approach has, however, been tested by modern life. Many things happen at different places simultaneously and the social order around which humans orient themselves and their actions is fragmented and constantly changing (Reichertz 2007). George Marcus (1988) was one of the first who challenged traditional ethnographic fieldwork and called instead for a mobile and multi-sited ethnography which

> moves out from the single sites and local situations of conventional ethnographic research designs to examine the circulation of cultural meanings, objects, and identities in diffuse time-space. This mode defines for itself an object of study that cannot be accounted for ethnographically by remaining focused on a single site of intensive investigation. […] This mobile ethnography takes unexpected trajectories in tracing a cultural formation across and within multiple sites of activity that destabilize the distinction, for example, between lifeworld and system, by which much ethnography has been conceived. […] Empirically following the thread of cultural process itself impels the move toward multi-sited ethnography. (Marcus 1988: 79-80)

Today, for many researchers "the field" is no longer a particular geographical location and its natives but rather "a field of practice" (Czarniawska 2007: 7-8). In a world where so many events take place simultaneously how can we follow people who are "constantly already elsewhere" (Strannegård and Friberg in Czarniawska 2007: 16), and are traditional observing techniques sufficient to study an increasingly virtual world (Barley and Kunda in Czarniawska 2007: 16)?

Therefore, no matter how useful a single method approach might be, it is not always the ideal solution. Brewer and Hunter (1989) stated that while each method can offer valid data and important insights, each also has limitations and restrictions. In order to deal with these shortcomings, the authors offer a multimethod approach in which a synthesis of various research techniques is used to improve data generation, analytical insights and social science knowledge. Inspired by this approach and attempting to write a

comprehensive biography of the date label, a single-method approach did not seem sufficient for my work.

The date label manifests itself in different ways: it is a government technology (regulating food safety and the market), information printed on a package, and a cause for undesirable food waste. All these manifestations exist simultaneously, depending on the social context and they are altered over time. How these matters come about might vary, and ethical considerations might be examined by other means than laws and regulations.

Therefore, each social context and period might ask for a different methodological approach in order to understand what is hidden in the *black box* date label and to reveal the multiple layers within its biography. One may not capture the various factors that lead to the *construction* of the date label if one does not follow the sequence of documents, laws, and legislations that led to its creation. In order to understand the *practical implications* of the date label it is useful to stand next to the printer that prints this very date on the package thereby actively changing natural lifetime of food into regulated shelf-life time. And one might find it hard to understand how the *consequences* of the date label could be addressed if one does not speak to activists who have dedicated their lives to the reduction of food waste. Therefore, multiple methods and sites were selected for this project.

This multi-sited and multi-method approach might not be adequate or feasible for any kind of research. First, by using several different methods one might be sacrificing depth for width, which might not be beneficial for certain research questions or projects. Second, this approach not only needs a long research period but also flexible time-management (as sites and interview partners have many different needs of their own) and this might not be suited for short-time, on-the-side research that has to be combined with many other tasks and duties.

Being a PhD candidate with one single project afforded me the “luxury” to engage in this type of research. Being able to test and use several research methods from interviews to surveys and from observations to document analysis was exciting, educational, and offered many insights that a less “multi-approach” would not have offered. Furthermore, the amount of varied data that such a multi-sited and multi-methods approach generates forced me to rigidly focus on my central object of study, the date label, as the main actor, the red thread, the cement that held all these different findings together, and avoid the

temptation to glance too far towards related topics like consumerism, food waste or sustainable consumption in general. However, being rigid in my focus did not mean that I was rigid in following abstract and pre-set rules or plans as the next section will show.

3.3. A grounded theory inspired process of gathering and analysing data

During the research I attempted to have a dialogue between research situation, methodological rules, and emerging theories rather than "forcibly applying abstract methodological rules to contingent situations" (Gubrium and Holstein 1997: 25). In this I was inspired by "logic of discovery in grounded theory" where theory is developed in a process of abstraction from the empirical findings (Glaser and Strauss 2009 (1967)). Rather than using data to prove or dismiss *a priori* assumptions, theory is discovered from the empirical findings of social research.

This does not mean that I came into the field without any pre-set plans or theoretical concepts in mind, but I was willing to have an open mind and let the reality of the research and the findings from my data guide me towards new approaches, concepts, and theories. Certain concepts like *government technology* (Miller and Rose 2008) and *black box* (Latour 1987) inspired and contextualized my work from the beginning onwards and were used throughout the research and in all papers that resulted from it.

Other concepts and convictions were altered or abandoned along the way through the "abductive approach" in grounded theory (Reichertz 2007: 218). Abduction is intended to help researchers "make new discoveries in a logically and methodologically ordered way" (ibid: 216), bringing together things that had not yet been associated with each other, abandoning old convictions, and allowing new ones. One example of this abandonment of old convictions is the connection between date labelling and food waste. Like many (see chapter four) I took the connection between date labelling and food waste as the central problem and starting point of my research. However, during my initial enquiries it became clear that I should approach this connection not as something given (almost natural) that could not be disentangled. When looking at the existing literature and examining my first data I realized that focusing primarily on consumers and their misunderstanding of the date label would leave a whole range of other actors and practices along the food chain next to invisible. Therefore, I changed my emphasis from consumers to producers and retailers, focusing mainly on their role in constructing and

practicing the date label. Once I made that switch, I saw more clearly that a focus on risk and safety, important as it is, should be accompanied by a focus on need and value.

Next to adapting and changing my focus and convictions I also had to employ data collecting methods that I had not used previously. Having a background in anthropology together with a training in STS meant that I first and foremost thought of doing interviews. In social science research, interviewing is the central resource of engaging with research issues in order to make sense of society (Atkinson and Silverman, 1997). From the outset, interviews were vital to this research.

However, in order to describe and examine a more comprehensive picture of the date label I felt I needed additional methods. First and foremost, since I wanted to open the black box of labelling in a historical perspective, my research required document analyses and archives. When following the date label along the food chain I found it necessary to observe the processes on site to gain a deeper understanding of how the date label works in practice. Being confronted with a Facebook poll made me look for a method to unravel how the date label itself could be used to reduce food waste. In the next section I will describe the process of gathering and analysing the data in more detail, starting with the pre-research I did: interviewing experts and consulting media archives. Afterwards I will describe the methods used for each paper in detail. At the end of this chapter, the reader will find an overview of the different methods used throughout the research.

3.4. Obtaining an overview: expert interviews and media archives
(March 2016 – July 2016)

The first sources that I consulted were media archives. In order to gain an overview of how much has been written about the date label through time in the Norwegian media I used *Retriever*[9], Norway's largest media-archive, to find articles containing words like "datomerking" (date labelling), "dato stempling" (date printing), "best før" (best before), "siste forbruksdag" (use by), "holdbarhet" (shelf life). I also did a search on food labelling (merking av mat/næringsmidler) in general. The earliest article mentioning food labelling dated 7th of April 1951 in the daily tabloid newspaper *Verdens Gang* (VG). The article stated that housewives should be ensured that they will get quality for their money and that this could only be reached by standardizing products and with use of labels. Fourteen years

[9] https://www.retriever.no/product/mediearkiv/

later, on the 5th of January, the same newspaper ridiculed the Ministry for Consumer Affairs for being the "most pointless ministry" for coming up with a proposition about product labelling. These two articles are examples of how I could find evidence for changes in needs, ideas, and issues through a change in rhetoric and argumentation of newspaper articles. These early articles were very useful when preparing the argument for the paper about the construction of the date label.

Next to reading the articles, I also counted the number of articles related to date labelling to find patterns through time. I categorized the articles into different topics related to date labelling to see at which times which topics were seen as worth writing about. The categories I used were: consumer rights and protection, consumer confusion about labels, production and sales, scandals about expired or simply old food, and food waste.

The first mentioning of food date labelling was in 1963 again in VG. The next article related to date labelling came only ten years later in 1973 in the newspaper *Raumnes*. The first article about consumers' confusion about the different labels (best before and use by) was from 1981. Until 1998 there were on average not more than four articles per year related to date labelling – exceptions being two scandals about out-of-date food found in supermarket freezers, articles that were published in several newspapers throughout Norway. Then in the early 2000s the average number of articles per year was about thirty and since 2008 this number rose to an average of about a hundred articles per year.[10]

When looking at the topics it became clear that there was an important shift around 2000 when the focus changed from scandals about old food being sold (which was also still reported on afterwards) to concerns about growing food waste and ways to avoid it. This obvious switch in issues worthy of being reported laid not only the basis for Paper Three (where the dilemma of food safety vs environmental sustainability is discussed) but it also forms the backbone for following and analysing the changes that the date label underwent from being a food regulation to an environmental challenge.

Next to doing a search on media coverage, I interviewed several experts in the field of date labelling, packaging, consumer perceptions and food waste. Bogner and Menz (2009) identify different types of expert knowledge. Important to keep in mind is that the category expert does not come natural but is relational and constructed – either by social

[10] In 2019 there were 119 articles that mentioned date labelling.

reality or by the researcher (making somebody an expert due to the research topic) or both (ibid: 48-49).

In my research all interview partners were experts as all of them worked either directly or indirectly with date labelling or related issues (food production, transport or retail, food waste prevention, food research, consumer research, food policy making etc.). For the sake of making a distinction during data collection and for this methods chapter I divided the interviewees in two groups: those who I call *interpretative experts* and those who are *technical or process experts;* thereby following Bogner and Menz in their division of technical, process, and interpretative expert knowledge (ibid: 52).

Within my research, the interpretative experts, were those who have done (academic) research about topics relevant for my research and therefore were *experts in terms of social knowledge* (ibid: 49). These expert interviews (spring 2016) were done to obtain an overview of the topic and its related issues and to learn what those who have done research already could tell and teach me. Initial interview partners came from the research institutes Nofima (2) and Østfoldforskning (1) and from the European Consumers in a Sustainable Food Chain project (COSUS) (1). Later in the project (in 2018) I interviewed two researchers from Wageningen University and two more from Nofima. Interviews were done in Norwegian, Spanish and Dutch, transcribed and then analysed.[11] With the information that I gathered in these initial interviews and by looking through the media archives I was able to identify the main research topics namely, the construction, practice and consequences of date labelling – each addressed (not exclusively) in one of the three papers. Next, I will describe the data collection and analysis undertaken for each paper.

3.5. The construction of the date label: documents, reports and pensioners (first paper; July 2017 – Dec 2017)

Paper One focuses on the historical construction of the date label. In order to gain a deeper understanding of these historical processes I "complicated" the *why* with questions of *how* (Jasanoff 2004: 276) "thereby lightening the weight of causality, or at least multiplying it […]" (Miller and Rose 2008: 6) for "in this way, one can begin to discern the web of relations and practices that result in particular ways of governing, particular ways of seeking to shape

[11] For thoughts about sampling and analysing interviews see the larger section about doing interviews in the subchapter: Practicing the date label along the food chain.

the conduct of individuals and groups" (ibid: 7). Throughout my research I was not only asking: *why* do we have a date label but also *how* did we get it, *who* was responsible, and *which ideas* was it based on? Also, *what* were alternatives and why were they not chosen?

Wood (2016) argues that "policy flows are not quantifiable and calculating processes, but part of the uneven movement of ideas and experiences that involves power and personalities" (ibid: 391). However, even long after those who have created it are gone (hence cannot be interviewed anymore), many of these ideas and policies are found in documents as documents are "a technology that encodes a great many levels, genres, and expressions of governmentality" (Dirks 2002: 59). Therefore, to find out more about the why, how, by who, which ideas and what alternatives of the legal construction of date labelling I used documents. Documents are primarily written sources that tell us what was happening. However, they can also reveal more about the strategies people chose to achieve certain goals and to solve particular issues. Furthermore documents are "ethnographic artefacts" (Riles 2006) and I therefore followed the trail they left behind. This historical sequence of documents showed the steps towards the date label as it is today. To understand today's regulation, I had to understand what it was built on. Consequently, I studied the trail of previous laws and regulations. Furthermore, I wanted to understand the thoughts behind date labelling and identify alternatives. Therefore, I included parliamentary debates and propositions.

Practically I first had to decide how far back in history I would go (as some secondary literature I used referenced regulations of the market and sales of products during the Middle Ages). I decided to begin with examining the 1860 *Health Law* (Sundhetsloven) and the *Law about Food Control* (*Lov om tilsyn med næringsmidler o.a. (Næringsmiddelloven)* from May 1933 as these were the first "modern" laws concerning consumer health and rights.

I used the online archives of the National Library[12] and the digital archives of Norwegian laws and regulations[13] to go back in time (as documents refer to their underlying legal basis) to find the subsequent documents. Afterwards I started with the oldest document to analyze what happened.

[12] https://www.nb.no/en/the-national-library-of-norway/
[13] https://lovdata.no/

The documents analyzed for paper one included:

- Sundhetsloven 1860
- Næringsmiddelloven 1933
- Instilling om kvalitetskontroll og bestemmelser for forbruksvarer (kongelig resolusjon 1957, avgitt 8 februar 1963)
- Odelstingsproposisjon Nr. 61 (Departement for familie- og forbrukssaker, 1966-67)
- Innstilling fra sosialkomiteen O. VII (1967-68)
- Budsjett-instilling S. nr. 139 (NOK 200.000, 20 oktober 1967)
- 112. ordentlige stortingsforhandling i Odelstinget, 3 mai 1968 (sak nr2)
- 112. ordentlige stortingsforhandling i Langtinget, 10 mai 1968 (sak nr2)
- Lov om merking av forbruksvarer, 24 mai 1968
- Forskrifter om merking av ferdigpakkede næringsmiddler, 25 juli 1975

For the argument in paper one I focused on the documents that led to the construction of the date label coded in the regulation from 1976. However, I also studied subsequent documents that had an influence on date labelling in Norway since then, including:

- Spørretime, 31 mars 1976
- Lov om merking av forbruksvarer, 18.12.1981
- Merking av næringsmidler (no 1917), 25.09.1986
- Merkeforskriften (no 1385), 21.12.1993
- NOU 1996:10 Effektiv matsikkerhet: en lov – ett departement- ett statlig tilsyn, 27.06.1996
- EF 178/2002
- Odelstingsproposisjon Nr. 100 (Helse- og omsorgsdepartementet, 2002-2003)
- Innstilling til Odelstinget fra næringskomiteen Nr. 36 (2003-2004)
- Forhandlinger i Odelstinget, 11.12.2003
- Odelstingsbeslutning Nr. 40, 15.12.2003
- Lov om matproduksjon og mattrygghet, 19.12.2003
- EU 1169/2011
- Matinformasjonsforskriften (no 1497), 28.11.2014

Following these documents, which included laws, decrees, government papers including propositions, recommendations, reports, and transcripts of parliamentary proceedings and discussions, I identified the main actors. I used their statements and arguments to relate underlying goals and interests, which often reflected the prevailing needs and issues of the time. Finally, I could picture how all these different arguments and issues led to a regulation that has not changed in its essence since it was finally implemented in the late 1970s (its path had started in the late 1950s). During this process, *the little date on the package* had

become akin to a living being with a biography, friends and enemies and with a strong will to get itself written into the law, which in the end happened.

Analytically, I first mapped out the different actors, both individual politicians (which I grouped according to their prioritization of consumer rights or market needs) and organisations/institutions (like the Consumer Agency, Ministries etc.) and then traced them and their arguments through time to learn about the differing goals, ideas and issues. I categorized the different arguments into pro consumer and pro market, cross-labelling them according to the "parent" of the argument. Using this technique enabled me to trace not only why the date label was constructed, by whom and how but also what the underlying ideas, needs, and problems were.

The second source of data were the *Forbruker-rapporten* (consumer reports) – the monthly magazine published by the Norwegian Consumer Agency (Forbrukerrådet). I read through all issues from its first in 1958 to its last in 2010. I did not go as deep into the reports as I did into the legal data, but used them mainly as illustrations, sources of citations and references and to obtain an overview how the issues of food (date) labelling, quality and safety were discussed and presented through time.

As documents are not able to "directly speak back" (Hodder 2012: 127) I attempted to add spoken to the written word. Here I faced the challenge that those who were involved in law making (especially the law from 1968 which formed the basis for food labelling) had passed away by the time of my research. I could however find some actors who had been involved less in the construction, but mainly in the implementation of the date label regulation in the seventies. From the signatures on the documents and information from today's employees of Mattilsynet (Norwegian Food and Hygiene Authorities) I found three possible interview partners. All three were retired, making it harder to find and contact them than people who are active in their working lives. One was too ill to participate, and another did not respond. However, one former employee agreed to be interviewed and during three interviews[14] this informant gave me a comprehensive, detailed and rich overview of what had happened around date labelling in the seventies and afterwards, adding a story and background information to the documents.

[14] See description of how I analysed interviews in the next section.

Studying the construction of the date label by following the documents through time helped me to further develop the idea of the date label as a *government technology* (Miller and Rose, 2008) that was used to translate law makers' ideas about how to secure food safety and a smooth working of the market into private, consumer households. Furthermore, "paperwork does not simply describe an external reality 'out there': Documents also take part in working upon, modifying, and transforming that reality" (Asdal 2015: 74). "On the one hand, a document is decided by the context of which it is part; on the other hand, a document takes part in itself in shaping that context and takes part in modifying it, together with the very issue at hand" (ibid: 86-87). Therefore, by following the trail left by the documents, I could not only learn about the social context, the ideas and powers of the times, but also better understand how the date label itself shaped the context in which it exists. Being inscribed and coded in a legal document, the date label transformed reality and shaped a new context in its attempt to solve an issue (food quality and safety). The concept of *script* by Akrich (1992) proved useful as the date label inscribed certain ideas and anticipations of how food should be consumed (used). However, what was not anticipated by those who created the *script* was how large the extend of these changes would be, how deeply the date label would change perceptions, values and needs of consumers. The outcome of the archive research and interview was mainly used in Paper One: *«Det lille merket på pakken»: Historien om datomerking i Norge,* which will be a chapter in the book *Den nye maten: Mat som industri og teknovitenskap, 1850-2016* (*The (hi)story of "the little date on the package" – constructing and implementing the date label in Norway*).

3.6. Practicing the date label: Following milk through observation and interviews

(second paper; January 2018 to August 2018)

As stated above this thesis was inspired by the work of Appadurai (1989) and, in order to find out more about the practice of the date label and how it influences the biography of food, I decided to follow one particular food item throughout the entire food chain. During my first round of expert interviews I included the question: which product would you choose if you were interested in date labelling? The answers were quite useful even though they differed widely - from salmon to eggs. Originally, I wanted to follow several products

but very soon it became clear that this would not be feasible. Instead of gaining shallow insights of many products, I decided to focus on just one product: milk.

I chose milk because it is an everyday product, which most Norwegians consume on a regular basis.[15] Norway is self-sufficient in its milk production and therefore I did not have to deal with international agreements or a global food chain. Furthermore, due to its connection to both, "purity" and "danger" (Douglas 1966), milk is noteworthy: one the one hand milk is often seen as the most natural, purest food product due to its connection to motherhood and nursing (Valenze 2011; Asdal 2014) while on the other hand its unsafe status as a source of death and disease gave it a very bad reputation until almost WWII (Atkins 2016 (2010)). This makes milk interesting both from a cultural and social perspective. Furthermore, it changed its status from a highly perishable product with a *use by* date to a general product with a *best before* label. Here the constructed-ness of the natural perishability of milk is shown and how changes in technology, but also perception, affect the evaluation and categorization of a product. This made it an even more interesting case from an STS perspective, which questions the dichotomy nature/culture, focuses on the constructed-ness of things and technologies, and stresses the possibilities of "it could be otherwise." The last reason for choosing milk was personal: I do not like milk when it is fresh and for sure not when it is getting sour, and I am guilty of throwing away way too much milk way too early. By following milk, I tried to somehow redeem myself from this moral dilemma.

A large part of research was done through observations of "locations" along the food chain, following milk from "the udder to the gutter". A food chain is a "large system of mutually interconnected phases, links and locations" (van Otterloo 2005) that is constructed to produce, transform or transport food from origin to the market. Locations are places where "transformations" of raw material into food take place and individuals and groups handle food. I mapped out the food chain of milk and the locations that I would visit. Originally, I identified seven locations: the farm, transport to the dairy, the dairy facility, transport to the supermarket, supermarket, consumer/household, and waste bin or rather sink. During the research I realized that I had to refine the location dairy facility by adding

[15] https://www.melk.no/Statistikk (March 2020)

two sub-locations: the laboratory and the printer. All these locations were not only conceptual but also were the defined "observation settings" (Schensul, Schensul, and LeCompte 1999) for generating data.

I visited one farm close to Trondheim; three dairy facilities from two different companies[16]; one transport company (which is the one dominating the entire food transport market in Norway) and two out of four major retailers (both their headquarters and local stores). As milk is not discarded via waste bags and therefore not collected or counted, it did not make sense to visit a waste handling facility. Instead I witnessed the waste handling of expired milk and milk cartons at the supermarket level. Even though milk might seem like such a mundane product and a supermarket such an everyday location, I tried to stay curious throughout, like a stranger who is somewhere for the first time and takes it all in, explicitly aware, and highly attentive (Spradley 1980: 55).

Most locations/settings were in fact new and strange to me. I had never been in a dairy facility before and entering one was an unknown and exciting experience. In all locations I made observations, which I wrote down during or immediately after the visit, herby capturing not only what I saw but also the smells, sounds and other sensual impressions, as observation should "consist of gathering impressions of the surrounding world through all relevant human faculties" (Adler and Adler 1998: 80). This might be especially relevant when studying food related topics. Unfortunately, due to the word restrictions that come with the article format these descriptions could not be made use of when publishing. Here is one example from a dairy facility in Trondheim[17]:

> After the talk upstairs in the presentation room Ø took me downstairs to the entrance of the facility. We joked that as it was close to Easter, he should be going to his cabin[18] but he said that cows do not take vacations so he cannot do so. In what seemed like an entrance hall I had to leave my rain gear, umbrella, jacket, gloves etc. I also had to leave the yellow high-visibility jacket that I had to wear in the outdoor area of the facility. We then passed a door and behind it was a change room with lockers.

[16] In Norway there are only three milk producers

[17] The original notes were written in German. Back at the office I made read-able texts out of the handwritten notes and translated these into English.

[18] In Norway Easter vacations are very important. Most Norwegians travel to their cabins in the countryside to enjoy the final days of cross-country skiing that season.

> Here I had to take of all my jewelry including my wedding band and put it in one of the lockers. Then I had to gear up in a suit and a hat made of thin cotton-like fabric while the shoes had to be covered in plastic wrapping and I had to put on plastic gloves. Furthermore, I had to use noise-protection earmuffs. Wearing these protective clothes made me feel that I looked ridiculous, as if I was in a movie like "Outbreak". Of course, Ø did not notice any of this and just waited impatiently for me at the next metal door. Here we entered the facility itself. The noise was deafening even with the earmuffs. Ø walked very fast and hardly left me time to take it all in. I felt as if I was in a futuristic movie. We were walking on metal bridges high above the conveyor belts that seamlessly moved around cartons and cartons of milk. Silver pipes formed a stainless steel-labyrinth that I could not even try to decipher. I was stunned.

Before, during and after observational visits and via phone/skype I conducted semi-structured interviews for which I had prepared a general interview guide and specific questions depending on the person I interviewed. In total I conducted sixteen interviews with twenty people from production, transport, retail, government authorities (Mattilsynet), interest groups (Matvett) and NGOs (Trondheim Matsentralen). According to the definition of Bogner and Menz (2009) these interviewees were *technical or process* experts, however in the overview the interviews conducted for Paper Two are classified as semi-structured interviews in order to differentiate from the expert interviews done in the beginning of the research. For Paper Two I also interviewed two scientists from the research institute NOFIMA who worked with food packaging and milk technology. I am aware that the sampling and recruitment of participants is crucial to the research and can influence the outcome in sometimes unforeseen manners (Korsnes Kristensen and Noem Ravn 2015). Qualitative methods often rely on interviews with relatively few individuals with special characteristics (Patton 2002). These characteristics are dependent on pre-defined selection criteria according to the research questions and topics. In order to get a picture as comprehensive and diverse as possible, I interviewed all main actors in the field. As the Norwegian milk, food transport and retail industry have a limited number of actors this was easily possible. I interviewed personnel from all four large-scale dairy producers in Norway (Tine, Q-melk, Røros Meieriet and even Synnøve who does not produce fluid, "drinking"

milk), from the one major food transport company, and from two of the four major retailers (with a third being approached, but who after some emailing back and forth decided against an interview due to time pressures). In all cases those interviewed were responsible for processes and decisions within production, transport, and retail and therefore also made decisions about date labelling and related tools and technologies.

All personal and phone interviews were conducted in Norwegian, taped, transcribed, and read twice before writing small summaries of each interview. I then grouped the interviews according to the locations (farmer, dairy facilities, transport, retail) and within each location used colours to organize the interviews according to topics. I decided not to use a software assisted coding system as the number of interviews was oversee-able and the most important information was the content of the answers and not the way in which it was said. Here some examples from topics among producers (the largest sample group): prolongation of shelf-life/date label (silver); impact date label production (orange); production processes and technology (light red); transport and storage (lilac); rules and regulations including STAND (light green); printing (light blue); networks and agreements outside of rules and regulations (dark green); freshness (dark blue); health and hygiene (pink); testing (dark red); packaging, sun taste[19] etc (yellow); consumer ideas and perceptions (black); food waste own field (brown); food waste consumers (beige). I then put topics of the same colour from different interviews together in order to find patterns, ideas, and inconsistencies. Here one example (not exhaustive):

Producers: food waste own field (brown)

BM/270218: Så det er... Mye går på optimalisering av prosessene. Vaskeprosessene. Og så er det da en annen ting som er viktig, det er å bli flinkere på, når du skal ha prognose, altså lage prognoser for produksjon, at du produserer riktig mengde til riktig tid.

MG/210318: men altså vi, det, det, det vi jobber med i forhold til å forhindre mat(?) og sånn, det er, for det er jo, for oss så er det jo, du kan kalle det matkasting eller svinn da, så er det jo et økonomisk tap da. Så det prøver vi jo selvfølgelig å, å redusere det, ja, ikke bare, ja, ikke bare for (?), men også for.., så det vi prøver på er jo først og fremst å bare sikre at vi har en embalasje, som du nevnte, som holder (??). Men så er faktisk det viktigste som vi, for oss i

[19] An off-taste produced by (sun) light.

forhold til det er produksjonsplanlegging faktisk. Når, altså hvor mye vi produserer og, og, og hvor mye vi har på lager.

VS/05042018: Vi kaster ikke mjølk så lenge den ikke er helsefarlig!

PR/120618: meste kasting er tidens vasking når du bytter produkter…her kan du gjøre ting bedre. Vi kaster omtrent 2-3%.[20]

When analysing the data, I had to constantly remind myself that I was studying date labelling and not milk production or food waste in order to keep the focus on my topic. Food waste was regularly presented as an almost inevitable outcome of date labelling, which made separating the two a challenge of focus during analysis. Furthermore, both producers and retailers often talked about consumers and their misunderstanding of the date labels rather than reflecting on their own contribution towards food waste. I often had to re-read the transcripts several times to find more subtle comments about their own practices and ideas. I both stepped into the field and immersed myself in the data to satisfy this curiosity, but at the same time I had to take a step back to observe and see possible alternatives to what I was told (Czarniawska 2007: 9). Therefore, the combination of observation and interviews proved rather useful.

Another challenge during the analysis of the interviews was to not just describe what happens along the milk-chain but to find underlying concepts and patterns beyond just a product moving through different locations. Here the observations on site proved useful as well. When watching the milk cartons being closed and then the date being printed on the label I vividly realized that this was the actual second when milk changes from being a product with a natural lifetime to one with a standardized shelf-life and that at this moment the milk carton not only black boxed the milk inside but also black boxed the life time of

[20] BM / 270218: So it is ... A lot goes into optimizing the processes. The cleaning processes. And then there is another thing that is important, it is to become better at, when you have a forecast, to make forecasts for production, that you produce the right amount at the right time.
MG / 210318: but then we, it, it, what we work with in relation to preventing food (?) and such, it is, because it is, for us it is, you can call it food waste or waste then, then it is a financial loss then. So of course we try to reduce it, yes, not only, yes, not only for (?), But also for .., so what we are trying to do is first and foremost to just ensure that we have a packaging , as you mentioned, which holds (??). But then, in fact, the most important thing that we, for us in relation to it, is production planning in fact. How much we produce and, and, and how much we have in stock.
VS / 05042018: We do not throw away milk as long as it is not hazardous to health!
PR / 120618: most waste happens at the cleaning when you change products… here you can do things better. We throw about 2-3%.

milk. This is when I started working on the concept of the *double black box*. The second concept used in this paper – intrinsic and extrinsic qualities by Callon et al (2002) – started to develop during several visits to supermarkets taking pictures of marked down products and during interviews with supermarket managers about the down-pricing of nearly expired products as a successful method of reducing food waste at the supermarket level. Here one can see how the theoretical concepts were rooted in the discoveries I made in the field and during the analysis of the interviews. The outcome of this interplay between interviews, observations and theory is the basis of paper number two: *Black boxing milk: Date labeling*[21]*, quality, and waste throughout the Norwegian milk chain* (2020), In: Food and Foodways, 28:1, 22-42.

3.7. Consequences of the date label: conferences, social media, and a failed attempt at bringing quantitative and qualitative research together

(third paper; April 2017-January 2019)

The topic for the third paper came to me during the Nordic Food Waste Prevention Conference, organized by the Nordisk Ministerråd in April 2017. At the end of the conference, Norgesgruppen (a large Norwegian food retailer and producer) came forward with the idea to add a sentence and date to the usual date label: *best before but normally useful until.* This suggestion and the following discussion between supporters and opponents of this initiative alerted me not only of the ongoing political debate about date labelling and sustainability, but also that "a crack" in the black box date label had been opened (Paxson 2016) and that for the first time the script (Akrich 1992) of the regulation was challenged. I took this as an opportunity to explore how the date label moved from being a food policy regulation to being part of environmental policy making and I kept a close watch on both the things that happened and the things that were said.

The change in the script of the date label happened in the dairy industry before other food producers followed. Therefore, I could make use of my existing network and interviews that I had already scheduled to also ask specifically about what came to be called "supplementary date labelling" in Norway. During at least twelve interviews I specifically asked questions about this topic. For me it was important to get a picture as detailed as

[21] This paper was published in an American journal, hence the spelling with one "l"

possible. Therefore, I did not only speak to several employees within the abovenamed Norgesgruppen (quality management, sustainability management and the one responsible for a consumer research about the addition) and the activist who started a similar initiative (Spis Opp Maten) and the dairy company (Q-melk) who was the first to use the supplementary date labelling. I wanted to add to the (hi)story by talking to all three fluid milk producing companies (Q-melk, Røros Meieriet and Tine AS), an additional supermarket chain (COOP), an NGO active in food waste reduction (Framtid I Våre Hender), and the food industry's organisation for the reduction of food waste (Matvett) who was actively pushing forward the supplementary date labelling. I also wanted to include the voices of those who, interestingly, were rather absent during the whole debate/process, namely the Norwegian Food and Hygiene Authorities (Mattilsynet) and the Norwegian Consumer Agency (Forbrukerrådet). Again, interviews were recorded, transcribed, summarized and colour coded. However, this time I was focused primarily on the supplementary date labelling, the responsible actors, the actions taken and the ideas, issues, needs, and politics behind it. Therefore, the analyse focused directly on these topics.

I also conducted (social) media research. Besides following media coverage of the topic in local and international media, I analysed a Facebook poll that TINE, the biggest dairy company of Norway, had done in January 2018. In this poll they asked their followers which additional sentence they would prefer *often good after*; *not bad after*; or *see, smell, taste*. What was interesting was not only that TINE did this poll after the industry had already decided on the wording of the supplementary date labelling (which I found out during the interviews), but also especially what consumers were thinking about this initiative. From the 675 comments, the most interesting were those of people who elaborated on their thoughts about this addition. As analysed in paper three, several saw the campaign as being promotional rather than helping to reduce food waste.

This brought me to the idea of doing quantitative research about supplementary date labelling among consumers. This had not been done before – Norgesgruppen had done research among their own customers but only about their own (later abandoned) addition: *normally useful after.* In collaboration with NOFIMA, a research institute for applied research on fisheries, aquaculture, and food, I designed an Internet survey, consisting of thirty questions. These included questions about date labelling and food waste in general

but also questions about the additional date labelling sentence and consumers' understanding of it. The survey ran from September to November 2018 and recruitment was done via snowball effect using my own network, several Facebook groups (for example International Mums in Trondheim), the university internal news channel Innsida and Nofima's network. 373 people filled in the complete survey. 75% of the respondents were female[22] and the majority was in the age group 35 to 44 (33%) followed by 25-34 (29%) and 45-54 (18%). The complete sample consisted of respondents aged 16-84. After having removed respondents who were not responsible for food or shopping the sample consisted of people having either principal responsibility for shopping (44%) and cooking (47%) or shared responsibility (55% and 51% respectively). Most respondents (63%) were neither active in an environmental organisation or following one on social media nor engaged with food professionally (94%), so the sample was rather neutral when it came to professional food waste knowledge. Afterwards all variables were recoded into zeros (not true/false) and ones (true/right) in order to be able to draw conclusions.

Inspired by the possibilities of a "mixed-methods research" (combining quantitative with qualitative data collection and analysis)[23] I originally had planned to make this survey a substantial part of my third paper. However, this attempt of combining qualitative research and quantitative research within one article was unsuccessful. Not only did the paper seem rather artificially constructed, bringing things together that do not belong together, it was also difficult to have one line of argument and analysis throughout the article – I had tried to fit two articles into one. Also, it proved next to impossible to find a journal that would accept this combination of qualitative and quantitative research. Therefore, I abandoned this level of mixing different research methods within one article. However, this did not mean that I did not make use of the data. Especially the two open questions: *can you share your ideas about the new date labelling* (155 answers) and *which information would you need to not throw away food based on the label alone* (86 answers) were very useful to me and offered valuable insights into consumers' ideas and perceptions of date labelling in general and the supplementary date labelling in particular.

[22] In this we are not representative of Norwegian society but in line with several other food surveys who tend to trigger a higher female than male response.
[23] See for example *Journal of Mixed Methods Research*: https://journals.sagepub.com/home/mmr

In this paper both the combination of different methods and the logic of discovering theories from the data proved rather intractable, stubborn, and unruly. After trying concepts like *nudging* (Thaler and Sunstein 2009 (2008)) and *discourse* (in the understanding of (Hajer and Versteeg 2005) I arrived to the conclusion that the already used (paper one) concepts of *government technology, script and translation* would be more useful to the understanding of how the date label shifted from being a mere food policy technology to a tool in environmental politics. The findings from the interviews, media research and survey were combined in paper three: "Best before, often good after": re-scripting the date label of food in Norway. *Nordic Journal of Science and Technology Studies*, *8* (1): 16-26.

3.8. Concluding remarks: a methodology for the study of black boxes

Black boxes are not enclosed; they are the result of the relationship between the observer and the observed. Thus, they are not an intrinsic attribute of the thing, but an emergent cognitive or epistemological property from the subject/object relation. Throughout this thesis I have attempted to follow several methodological strategies in order to open-up the black box of the date label. The date label as a *fait accompli* might be a black box, but only at the beginning of the investigation, as a definition of the object of study. Following the date label through time and space, guided by the empirical findings and using different methods to investigate the biography of *the little date on the package* can reveal what is hiding inside the black box and thereby add to the understanding of the construction, practice and consequences of this government technology. By following the *thing*, the human agencies, ideas, and elements that went into its construction and use become visible.

Following the trail left by legal documents and different media one can identify the different social, cultural, and material forces that were mobilized in the creation of the date label. This approach revealed the underlying issues that went into the date label before it became black boxed and inscripted with a certain meaning and intended way of use. Afterwards, when studying its daily practice though interviews and observation, the interplay between the date label and other actors along the food chain became clearer and the interdependencies between human and non-human (f)actors were made visible. By looking not only at the endpoint (consumers) but including cows, microbes, farmers, drivers, dairy facilities, laboratories, printers, store managers, and refrigerators, the mechanisms

that define the date label as a double black box and a double script became visible. Furthermore, we can see the intended as well as unintended consequences of the date label and how they feed back into its current re-scription. Through interviews, media research, and surveys it became clear that the date label shifted from being a tool and technology in food policy to an environmental issue. I argue that the combination of a multi-method research and a grounded theory inspired approach enabled a rich set of data and dialogue between theory and empirical findings. This then formed the basis for unpacking the black box date label, revealing its different layers and functions being simultaneously an information infrastructure, a script, a government technology, a parameter for value and quality, and an obstacle for sustainable consumption.

Data sources	Period/time	Examples of data sources	Analysis methods	Article/topic
Newspaper articles	March 2016-Dec 2019 (articles date 1963-2019)	Search terms: dato merking, dato stempling, best før, siste forbruksdag, holdbarhet Newspapers: Verdens Gang, Adressavisa, Aftenposten, Raumnes etc	Thematic analysis, quantitative analysis	Mainly used in paper one, some in three Construction, consequences Plus: keeping up to date with developments
Reports and handbooks	May 2016 – April 2019	Forbrukerrapporten 1958-2010 Offentlige bestemmelser for produksjon, frambud m.v. av næringsmidler "Matsvinn i Norge. Rapportering av nøkkeltall 2015-2017 " (2018) "Date Labelling in the Nordic Countries. Practice of Legislation." (2014) "Handlevaner og holdninger til mat og holdbarhet. Befolkningsundersøkelse gjennomført av Norstat for Forbrukerrådet " (2016)	Document analysis	Paper one, two and three Construction, practice, consequences
Legal documents	March 2016-December 2017	Sundhetsloven 1860 Næringsmiddelloven 1933 Instilling om kvalitetskontroll og bestemmelser for forbruksvarer Odelstingsproposisjon Nr. 61 Innstilling fra sosialkomiteen O. VII 112. ordentlige stortingsforhandling i Odelstinget, 3 mai 1968 112. ordentlige stortingsforhandling i Langtinget, 10 mai 1968 Lov om merking av forbruksvarer Forskrifter om merking av ferdigpakkede næringsmiddler Codex Alimentarius	Document analysis	Mainly used in paper one, some in three Construction
Social media research	January 2018	Facebook poll Tine	Quantitative analysis and thematic analysis	Paper three Practice, consequences
Observation		Farm in Trøndelag ASKO Norge AS TINE SA meierier (Tunga and Oslo) Røros meieriet Two supermarkets in Trondheim Two small food stores in Trondheim and Oslo Headquarter Norgersgruppen Oslo Local headquarter Coop Trondheim Nordic Food Waste Conference (27-04-17) COSUS Conference (16-06-2017) Opening Matsentralen Trondheim (05-04-2018)	Grounded theory inspired analysis of observations (field notes)	Paper two and three Practice, consequences
Semi-structured interviews	7th of April 2016 to 31st of October 2018	Food Production (Dairy): 11 interviewees Transport: 1 interviewee Retail small: 2 interviewees Retail large: 5 interviewees Authorities and interest groups: 7 interviewees Activists and NGO's: 4 interviewees	Grounded theory inspired analysis of content, thematic analysis	Paper one, two and three Construction, practice, consequences
Expert interviews	14th of June 2016 to 24th of May 2018	8 expert interviews (Nofima, Wageningen University, Østfoldforskning, Cosus)	Grounded theory inspired analysis of content, thematic analysis	Paper one, two and three Construction, practice, consequences
Survey	Sept 2018 to Nov 2018	373 respondents	Coding into zero (false) and ones (true); thematic analysis of open questions	Paper two and three Practice and consequences

4. Previous Research

Much has been written about the date label in recent years – especially about the connection between the expiration date and (consumer) food waste. To place my own research within this field this chapter offers an overview of selected research on food, labelling and waste.

4.1. Foodways and Food Chains: risk and trust

At the risk of oversimplifying many different approaches towards food, many food research studies belong to either one of these two categories: studies of foodways and studies of food chains. Foodways are the cultural expressions of food (intake) and studies of these often focus on tradition, identity, memory, taste, religion, class or community (Goody 1982; Appadurai 1988; Murcott 1996; Lupton 1996; Harbottle 1997; Warde 1997; Sutton 2001a, 2001b, 2008; Sutton 2010; Kjaernes 2001, 2005; Amilien 2003). Food chain studies on the other hand centre on infrastructures or systems emphasizing politics, economics or use of technology (Mintz 1986; Archetti 1997; van Otterloo 2005; Benson and Fischer 2007; Belasco and Horowitz 2009; Borgen 2011; Borgen and Aarset 2016). As the date label touches both food chains (handling of food) and foodways (qualifying food), I attempt to combine both approaches into one. One way to connect foodways and food chains is to look at notions of trust in (industrialized) food and the need for risk avoidance when it comes to food intake as risk and trust touch on both perceptions and practices.

Humans have an ambivalent relationship to food – food is a need, a necessity for survival but it can also pose a danger, not only physiologically but also culturally or socially. Being omnivores poses a dilemma to humans (Fischler 1988; Rozin 1999) as it positions us between the opposing tendencies of "neophilia" - humans as omnivores[24] have to eat a varied diet and therefore be open to taste new, unknown food – and "neophobia" – a constant anxiety about unfamiliar food. Unfamiliar food might be "naturally" dangerous (poisonous plants for example) or culturally dangerous, meaning food that is deemed impure or polluted by one's social group, religion or society (Douglas 1966). This food

[24] The authors do no discuss deliberate dietary choices like veganism or vegetarianism.

anxiety needs constant management. All societies have a dietary system that has not been scientifically developed but is based on "a set of categories classifying foods within a particular framework" (Poulain 2017 (2002): 73). Even though consumers generally do not consider food as being polluting or forbidden in a religious sense, modern consumption patterns profoundly influence our ideas about which food is edible (fresh) or disgusting (old) as I will show later in this thesis. This *omnivore's paradox,* this ambivalence towards food, this anxiety, has strong implications for ideas about food risks and our trust in food.

According to Fischler (1988) and Rozin (1999) the *omnivore's anxiety or dilemma* is focused on the act of incorporation, when food crosses the "frontier between the world and the self" – "du bist was du ißt" (you are what you eat) - both in a biological but also a cultural sense. Food poses a risk to health and even life and this risk multiplies with time. "Risk emerges when nature and tradition lose their influence, and man must make decisions on his own initiative" (Beck in Poulain, 2017 (2002): 68). In cases of accident or ill-fate, in modern times ideas about destiny were exchanged for (human) responsibility and (company) accountability (Beck 1992; Poulain 2017 (2002)). Paradoxically, the more scientific knowledge we have about food, the more elaborated the technology to protect what we eat and the better food safety has become, the greater our food insecurity has become as well (Hadden 1986; Sassatelli and Scott 2001; Kjærnes 2007; Eden, Bear, and Walker 2008b).

A European wide study about trust in food revealed that the trust in food is higher in countries where the overall trust in the government is high (Kjaernes, Harvey, and Warde 2007). As the distance between *field and fork* grows (Sassatelli and Scott 2001; Poulain 2017 (2002); Eden, Bear, and Walker 2008b; Myrvang 2009; Zachmann and Østby 2011) - due to industrialization, globalization and the supermarket revolution - the sense of insecurity among consumers grows. This distance is both geographical and cognitive. Consumers are increasingly estranged from the origins of their food and therefore in some sense from the food itself. Being less and less able to judge products themselves, consumers have to rely on labels for the necessary information and confirmation that what they are about to eat is safe. Date labelling is a mediator between an ever more complex and distanced food chain and the foodways of consumers – connecting the two but also touching and influencing both in profound ways as I will show later.

4.2. It is all in the label

Food policy making is a wide field with articles, books, reports and even entire journals (for example *Food Policy* by Elsevier or *World Food Policy* by Wiley) dedicated to its research. Here I want to focus on food labels as instruments for food policy making. What is a food label and how does it work? Before turning towards date labels, I want to take a closer look at three diverging approaches for answering these questions as they made me think where and how to position my research and how to add to the field. Regulations about food labels are an important part of food policy making. Food labels are often identified as brokers or intermediaries[25] between *field and fork* (often being simultaneously a geographical and cognitive distance). Bildtgård defines food labels rather radically as "the only actual contact between the consumer and the production process" (Bildtgård, 2008: 117). Renard (2005), building on Carimentrand and Ballet (2004), describes labels as reducing the time consumers need to distinguish between products by synthesizing information about them. Food labels convey information to consumers who often neither have the time nor the knowledge to judge food products properly and to make informed decisions about their food purchases. This mediating role of labels, however, should not be interpreted as a neutral transfer of knowledge.

Sally Eden (et al.) repeatedly warned not to apply a simple "deficit model" of knowing producers versus unknowing consumers. Food labels are more than a one-way "knowledge-fix" (Eden, Bear, and Walker 2008a, 2008b). Her arguments against the knowledge-fix idea are the following: first the information is not a one-way flow to a passive recipient. Consumers re-interpret, resist or ignore information. Second, rational decision making is given too much weight. Third, information can also have negative rather than only positive effects (e.g., fostering anxiety). Fourth, the freedom of consumer choice is over-emphasized while restraints due to income, provision system, personal circumstances etc. are ignored (Eden, Bear, and Walker 2008a: 1047). Building on Star and Griesemer (1989) she defines food labels as "boundary objects" (Star and Griesemer 1989; Eden 2011) that enable communication between consumers and producers. According to Eden food labels as boundary objects are

[25] In Paper One I draw on this concept of the date label as a necessary intermediary between food producers and consumers in Norway.

> made sense of in an active, two-way process that also puts that information to work, enabling different social worlds – of producers, regulators, retailers and consumers - to enact changes to food through sharing information (Eden, 2011: 192).

Her emphasis on food information as being "heterogeneous and allowing for flexible interpretation" contrasts with Yngfalk's interpretation of food labels as actualizing a neo-liberal consumerism "in which consumption is enacted as a site of bio-political control" and where labelling standardizes consumption "as well as disembodying the marketplace as an area of knowledge creation in consumption" (Yngfalk 2016a: 275). Rather than empowering consumers through information, food labels are also disempowering by "rendering consumption temporalized, standardized, and disembodied" (ibid: 291).

Between the approaches of Eden (two-way boundary object) and Yngfalk (one-way bio-political control) lies the concept of food labels as "information infrastructure" (Frohlich 2017). Frohlich identifies a historical informational turn that happened in the last century, shifting policies away from regulating the object itself, towards "regulating the mediated interaction" (ibid: 150). Food as information (rather than knowledge) can be objectified, abstracted, and decontextualized in a way that it circulates much easier than cultural knowledge about food (ibid). Information is easier to regulate than objects or cultural knowledge and therefore there has been a shift towards a politics of information rather than politics of food itself.

Even though I find Eden's arguments against food labels as a knowledge fix valid, I am not sure whether all food labels can be easily identified as boundary objects (Eden et all, 2008, did research about eco-labels). My findings both in the past (Paper One) and more recent (Paper Three) show that consumers are often spoken about rather than speaking for themselves and date labelling was and is rather a top-down rather than a bottom-up approach. Yngfalk's (2016) contrasting idea that food labels are neo-liberal, disembodying, bio-politicizing control mechanisms is problematic as well. As Paper One shows, at least in the Norwegian case, date labelling regulation pre-dates neo-liberalism and is rather an example of the high-modernist idea to regulate the market for the common good rather than a neo-liberal example of market self-regulation. Furthermore, even though strongly

embedded in modern day consumer culture, consumers do have a choice to either follow or disregard the date label (dumpster divers being an extreme form of disregard for the label).

I position my thesis between these two contrasting ideas about flexibility and control. I furthermore agree with Frohlich that policies about food labels are neither a one-way knowledge fix, nor a real two-way communication – even though food labels might appear neutral, they are often set in place to steer consumers towards goals that are set by policy makers among industry and state – one of them is food waste reduction (see Paper Three).

4.3. The entanglement of date labels and waste in the literature

As mentioned before, it is hard to draw a line between date-label literature and food waste literature as they often go hand in hand, the first being presented a causal side product of the other in many popular and scholarly writings. Once food waste was recognized as an issue, the date label also received a prominent place in research and literature (being generally identified as the cause of the problem) – it moved from being exclusively a food policy topic to an environmental and sustainability policy issue. Most of the research described in this section was done in the last decade. Since 2010 we can witness an "explosion" of food waste/date label literature spanning from articles in the social sciences and humanities, to economics and marketing, to reports done by research institutions, the industry and the government to popular science and activist literature. The field has become so vast, with new articles being published on a regular basis, that it is impossible to give a comprehensive overview. I will start with two historical overviews about food waste and date labelling respectively, before giving a selected overview of *practices* or *perceptions* about date labelling/food waste.

In their *Brief-history of food waste and the social sciences* Evans et al. (2013) start by presenting how waste is generally defined:

> In sum, waste is imagined as that which is left over – the redundant afterwards of social life that only register when the need to do something about them has been identified (Evans, Campbell, and Murcott 2013: 7)

They distinguish two historical transitions in food waste. The first transition was from visible to invisible waste, happening between the mid-nineteenth to the mid-twentieth century. Traditionally waste was relatively visible and morally associated with notions of thrift and waste-avoidance. However, due to growing affluence and better waste-collecting activities by the state, after WWII waste became increasingly invisible and less of a social concern – it had no place in a society built on ideas about "productivity, efficiency and excess" (ibid: 15). However, today we are witnessing another transition, away from invisibility and back to visibility as waste today is "harder to afford" (ibid: 17) in light of economic crisis (2008) or sustainable production and consumption. The date label is part of this transition as according to many it is part and parcel of this unnecessary and unsustainable food waste. Evans et al. only once mention date labelling, and only as related to dumpster diving, which according to them "involves freegans exploiting the seemingly arbitrary nature of 'use by' labels" (ibid: 20). In this quote the authors unfortunately confuse the safety label 'use by' (generally also followed by dumpster divers) with the quality label 'best before,' which they indeed challenge. They do not go deeper into how the "seemingly arbitrary nature" of the date label.

Following the legal construction of the date label through time Milne describes how "reforms to the date label have occurred in response to shifting concerns about food quality, safety and latterly waste" (Milne 2013: 84). He shows how in the United Kingdom date labelling moved from being "a consumer-oriented tool primarily concerned with ensuring food quality, to be at the heart of the regulation of food safety" (ibid: 92). His article ends with showing how the growing food waste problem leads to efforts to disentangle the quality and safety roles of the labelling system. Interestingly, as Paper One shows, the Norwegian case differs from the British one. In Norway, concerns for food safety (*use by*) predate concerns for food quality (*best before*).

After this short glance at these two historical overviews, I now turn towards research about the current situation. While working with the literature on the entanglement of date labelling and food waste I encountered two main approaches towards the topic: one is mainly concerned with *practice*, the other with *perception*[26]. Let us look at practice first.

[26] In this thesis I focus on households as end-users of food products and therefore leave out the hospitality (restaurants, hotels, canteens etc.) and public service (schools, kindergartens, homes for the elderly etc.) sector.

This brings us back to Evans, who uses ethnographic examples to explore the dynamics of domestic food practices and who identifies food waste as a consequence hereof (Evans 2011, 2012). In two articles he describes several themes: feeding the family, eating properly, routines of household provisioning and anxieties about food safety. He then shows how these practices can usefully engage with public and policy concerns about food waste. He suggests that it is "overly simplistic to blame consumers for these problems or individualize responsibilities for solving them" (Evans, 2011: 437). In both articles he reaches the conclusion that the passage of food into waste occurs as a consequence of ordinary domestic practices and the contingencies of everyday life (Evans 2011: 438 and Evans 2012: 53).

Watson and Meah (2013) provide another example of how public discourse engages with domestic practice. Two "social anxieties", namely the moralizing of food wasting on the one hand, and concerns with food safety on the other, pull household practices of food provisioning potentially in two conflicting directions. They too recognize food waste as the fall-out of the organization of everyday life and state that "the matter that is food" becomes waste through practice (ibid: 116).

The temporality of food in combination with the domestic practices of food provisioning are also present in studies from the Nordic countries. Mattila et al (2018) describe how practices organize temporality to reduce food waste. They state that there is no single practice of reducing food waste and they identify four "bundles of practice organizing temporality": scheduling, pausing, stretching and synchronizing (ibid: 10). Another Nordic example bridges the *practice* and the *perception* focus (Stilling Bilchfeldt, Mikkelsen, and Gram 2015). The authors investigate ideologies (altruist/hedonist), feelings (duty/disgust) and skills (internalization/ objectification) leading to food waste. However, throughout their article interviewees point towards everyday practices as reasons for food waste despite consumers' best intentions.

This brings us to the body of literature that takes consumer *perception* and *attitude* as a starting point rather than *practice*. While the literature on waste practice is generally grounded in qualitative date collection, the perception-approach is often based on a combination of qualitative and quantitative data. Here are some examples from the COSUS project ('COnsumers in a SUStainable food supply chain'). This project was a collaboration

between five countries and ran from 2014 to 2017. The participating partners published several articles about suboptimal foods and the consumer's role in causing and reducing food waste. One example investigated consumer preferences for suboptimal products (for example close to or expired products) and how these preferences were influenced by demographics, personality characteristics and by individual-waste aspects (De Hooge et al. 2017). Many of these articles also present possible actions focusing on changes in consumers' perceptions in order to reduce food waste (Aschemann-Witzel et al. 2015; Aschemann-Witzel et al. 2018).

An earlier example of writing about consumer perception (of risk) and purchasing behaviour is given by Michael Tsiros and Carrie Heilman (Tsiros and Heilman 2005) who tested several hypotheses about the frequency of date checking among 300 American consumers. Another example of approaches that focus on consumer attitudes are Abeliotis et al and their research into Greek households. Interestingly, they argue that food waste reduction in Greece had more to do with financial considerations in the aftermath of the financial crisis rather than environmental concerns (Abeliotis, Lasadiri, and Chroni 2014). Further examples are Lind Melbye et al.'s (2018) research about affluent consumer attitudes towards wasting edible food in Norway and Wilson et al.'s (2018) study about perceptions of date labels in the United States (where, contrary to the European cases, there was still no uniform, national food date labelling law in place at the time of writing). As only a very small part of my research dealt with quantitative data and consumer perceptions, I drew very useful information from these sources to build on in my own papers. However, both the practice and the perception approach focus almost exclusively on consumers. This focus led me to broaden my research and to look at the whole food chain.

4.4. A few glimpses beyond the consumer

I found only a handful of approaches that take policy makers, retailers and marketing into account. Concerning retail and date labelling, some publications of the COSUS project include possible waste-reducing actions by the marketing and retail sector (Aschemann-Witzel, De Hooge, and Normann 2016; Aschemann-Witzel et al. 2018). However, the consumer is nevertheless the starting point of the research. Yngfalk (2016a) goes further and includes the experiences and practices of retailers in the Swedish marketplace not as an

outcome, but as part of the bio-politicizing mechanisms that, according to him, underly date labels. Devin and Richards (2016) look at the connection between power, corporate social responsibility and food waste in Australia and conclude that even though many retailers meet their social responsibilities of food waste reduction that are given as targets, many of their practices actually enable more food waste than reducing it. Gruber et al (2016) interviewed store managers to shed light on food waste and human reality. Both these studies do not focus exclusively on date labelling as the cause for waste but look at waste in general. The final retail example is more explicit. Gavin Whitelaw (2014) describes how Japanese corner store managers deal with the date label. Based on extensive fieldwork he portrays how shop managers literally "eat their losses" caused by the passing of the expiration date by eating out-of-date products themselves. While there is some literature that takes the retail sector into account, research about date labelling practices at the production level is either very technical or economic. This is where my thesis can contribute.

4.5. Contributing to the field

In this overview I have presented some of the main arguments, thoughts and fields of study concerning date labelling. The thesis builds on these previous studies and contributes to the discussion by using a multi-methods approach and the combination of foodways with a food chain research. I identified four areas where this thesis contributes to the field of research. *First*, most of these studies (exceptions are for example Milne, Evans et al and to some extend Yngfalk) focus mainly on the effects rather than the *construction* of the expiration date. This construction is not merely a one-time historical account (which I offer in Paper One) but an ongoing process in which the shelf life of products is continuously constructed and re-constructed due to changing practices and technologies along the food chain (see Paper Two) but also through changes in discourses and issues (see Paper Three). *Second*, this approach helps to historicize and thereby "*de-naturalize*" the connection between the date label and food waste (date label A automatically leading to food waste B), placing date label issues at the cross-roads between food policy and environmental policy making. Paper One describes that initially date labelling was not associated with food waste in any way but was put in place to govern and regulate food quality and safety. Paper Two and Three show

that there is flexibility in the seemingly rigid date label so that it does not automatically have to lead to food waste.

This I could do because, *third*, I did not focus on *consumers alone* but applied a whole food chain approach. I followed the date label not only throughout history (Papers One and Three) but through the whole (milk) chain, looking at how food value, food waste and the expiration date are interrelated and co-constructed by different actors, technologies and practices (Papers Two and Three). However, *fourth*, rather than focusing primarily on *either practices or perceptions* I combine the two approaches looking at both foodways and food chains.

When looking at recent reports, media coverage and scholarly literature there is a strong sense of urgency around the problem of food waste and the date label has come under a lot of scrutiny lately. It might be beneficial to the discussion to take a step back and to look at how the date label was constructed and how it is practiced rather than focusing predominantly on its consequences. In the next chapter I will present the theoretical resources on which the analysis of my findings will be based on.

5. Theoretical resources

As we have seen in the previous chapter, there are many ways in which the date label can be approached, studied and analysed. Moving from being a food policy regulation towards an environmental issue and being situated at the cross-roads between foodways and food chain research, the date label is open to a wide range of theoretical and empirical approaches. In the methods chapter I have explained how the theory has developed out of the empirical findings and has constantly been in dialogue with the data. In this chapter I will offer an overview of the theoretical toolbox that has come out of this dialogue. These theoretical resources are then used for the analysis of the construction, practice and consequences of the date label.

5.1. Date Labelling in a Science and Technology Studies (STS) perspective

The research I used came from either sociology journals (Milne 2013; Evans 2011; Watson and Meah 2013) or journals about markets and marketing (Aschemann-Witzel et al. 2018; Wilson, Miao, and Weis 2018; Yngfalk 2016a; Lind Melbye, Onozaka, and Hansen 2018). This might explain a focus on consumers (humans) and their practices and perceptions as well as a tendency to be occupied with the effects (food waste) rather than the construction of the date label. Here is where an STS inspired approach might add to the previous findings of other scholars. Many STS scholars challenge the very concept of natural vs cultural (e.g.,Haraway 2004) and take both human and non-human actors into account (e.g.,Latour 1988), reminding us that "the stuff of the social isn't simply human" and most of our interactions with other people are mediated by objects, tools or technologies (Law 1992: 381). The focus is taken away from predominantly humans, their perceptions and practices to a collaboration of humans and non-human actors, acknowledging their roles and contributions in social and cultural processes and practices. Humans constructed the date label, humans use the date label and are influenced by it and humans have to deal with the consequences. However, non-human actors are often responsible for the lifetime of food and herby co-construct the expiration date (bacteria, cells, proteins) and non-human actors help prolong shelf-life (packaging, tapping machines, cooling systems). When opening the

black box of the date label we find both human and non-human actors, technology and society (Bijker, Hughes, and Pinch 2012 (1987): XII).

Black boxing, originally coined by cybernetics in the mid-twentieth century, refers to the (over)simplification of complicated systems, mechanisms or objects, by focusing only on their inputs and outputs. Later this terminology was applied to for example studies of science (Latour 1987). The argument is that once knowledge is established and accepted, the complex processes involved in its creation are forgotten or neglected. Once a system or a technology is in place, the practical politics behind it are often forgotten (Bowker and Star 2000). Like this "a heterogenous set of bits and pieces each with its own inclinations" is turned into something that "passes as a punctualized actor" (Law 1992: 386). The date label has become such a *black box* or *punctualized actor* – many use it without knowing what has gone into it (both into its historical and daily construction) and which ideas and goals were behind it.

The expiration date has been originally constructed due to a growing need for information and guidance for consumers. The date label is literally a script, but it also contains a *script*. According to Akrich (1992) technologies and artefacts (in the widest sense) contain a script, that "like a film script" defines "a framework of action together with the actors and the space in which they are supposed to act" (ibid: 208). The script is inscribed into the objects or technologies based on the assumptions and hypotheses of the designers and makers and prescribes a certain use and practices. However, this script, when moved through time and space, meeting different actors and objects, might take different meanings and understandings. The date label, by translating natural lifetime into shelf-life time, has been mis- and re-interpreted by its users, the consumers, who started seeing *best before* often as an absolute cut-off date rather than as a guideline. This misinterpretation of both the literal and the intended script led to the date label moving from a pure food regulation to an issue in environmental policy making.

The re-scripting of the date label, which I describe in Paper Three, is an example that technologies are neither deterministic, nor strict and unchangeable and that *it could be otherwise* (ICBO, Steve Woolgar). Even "the set of categories classifying food" (Poulain, 2017 (2002): 73) as edible (fresh) or disgusting not (old) (Egolf, Siegrist, and Hartmann 2018) is not given or stable but constructed and changeable as I will show later in the thesis.

Arguably, the non-human date label has taken over many decisions about freshness, value and waste, however still humans "decide" to be influenced by it in such a profound way. It is this interplay between the non-human date label and its human creators and users what makes the *little date on the package* so interesting.

5.2. Four theoretical resources

Besides the above-named concepts of non-human actors, black box and script there were four main theoretical resources that this thesis draws on, namely *standards, government technologies, values and needs*. Even though on first sight this might seem like theoretical cherry picking, this approach makes sense when ordering the different theoretical resources around the unifying and continuous thread in this thesis: its empirical object of study, the date label. The *need* to *standardize* the unruly matter of food and a growing need for freshness led to the creation of the *government technology* expiration date, which then had a significant effect on not only how consumers, but also producers and retailers, *value* and evaluate food products throughout the food chain. The date label changed our foodways by influencing consumers' ideas about freshness with substantial effects for a sustainable food chain. This then created new needs and issues that need to be solved (which in Norway is attempted by re-scripting the wording of the date label), moving the date label out of the realm of food regulation and into environmental policies. Therefore, taken together and building upon each other the four theoretical resources will help making more sense of the construction, practice and consequences of the date label, while at the same time using the empirical data of this case to add insights to the concepts themselves.

5.2.1. Unruly matter, standardized food

The basis for this research can be found in the materiality of food and the unruliness that comes with perishable products. Atkins summarizes this very eloquently in a single sentence:" […] the materiality of food is a major factor in how food chains are assembled and how quality is constructed […]" (Atkins 2011: 74). He also reminds us that: "[…] an appreciation of the active capacity of material is crucial to an understanding of the persistent crisis of confidence about food safety" (Atkins 2016 (2010): 7). As described above humans divide food into "the Yum and the Yuck" (Rozin 1999: 27). According to Rozin, besides being *fundamental* to human survival, food is *fun* and *frightening* – "a

pleasure and a poison" (ibid: 17). Food can be potentially dangerous and in an industrialized food market, with a long distance between "field and fork" (Sassatelli and Scott 2001; Poulain 2017 (2002); Kjaernes, Harvey, and Warde 2007; Eden, Bear, and Walker 2008b; Zachmann and Østby 2011) consumers are often challenged or simply unable to deal with the materiality of food. The speed of the decay process is often deemed unpredictable by consumers, which creates further uncertainty (Mattila et al. 2018: 5). The question is then, how to make food more fun and less frightening, a pleasure rather than a poison, and how to make the food chain less unruly?

The European Union Food Authority answers this question on their website. In the view of the EU: "Science protects consumers from field to fork". [27] Based on knowledge provided by scientists and experts, rules and regulations standardize unruly food matter into predictable food products. Nature (food) is being reshaped into measurable and calculable units (Asdal 2004, 2011). According to Busch, standards are central to our lives as they "order ourselves, other people, things, processes, numbers and even language itself" (Busch 2013 (2011): 3). Today's world is a standardized world - we encounter standards everywhere, they have become taken for granted and "completely embedded in everyday tools of use" (Lampland and Leigh Star 2009: 11). In the food sector almost everything has become standardized, from the shape of cucumbers to the drinkable lifetime of a tea bag. This was done not only to protect consumers, but also to guarantee an efficient and smooth working of the market.

Here, I draw inspiration of what George Ritzer calls the *McDonaldization of Society* where *efficiency, calculability, predictability and control through non-human technology* can be identified not only as the basis of the success of McDonalds but as an irresistible recipe that has been applied to ever more endeavours in modern society (Ritzer 2000). These four dimensions can also be applied when thinking about the success of the expiration date. Unruly food needs to become calculable and predictable, controlled by technology to move efficiently through the food chain and across markets. However, like the (seemingly) rational system of McDonaldization also the rational system of date labelling inevitably spawns irrationalities (ibid: 16). Wasting perfectly edible food (speak: nourishment, resources,

[27] http://www.efsa.europa.eu/en/corporate/pub/corporatebrochure

money etc.) merely because a date on a label has passed is such an irrational consequence of a rational system.

These irrational consequences happen because humans have become that used to standards, that dependent that they trust them more than their own senses. Both Busch and Lampland and Star argue that the pervasiveness of standards stems from their embeddedness in our society. Standards have become so entrenched in our everyday life that people consider them as almost naturally given, rather than constructed by several (competing) actors, based on various aims and ambitions, through often arduous processes. Users seldom think about what went into standardized dates or measures. Standards have become *black boxed*, "opaque and obscure", rendering the "internal complexity", the technical and scientific work gone into the black box invisible to those using them (Latour 1987, 1999). People have come to accept these black boxed standards without thinking much about what lies behind them. Therefore, standards, for example the date label, play an important role as tools and technologies of government.

5.2.2. Government studies and mundane politics

The second theoretical resource draws from governmentality studies. Based on Michel Foucault, the focus of these studies is how government is conducted in practice rather than theory. Miller and Rose (2008) claim that modern government is not only based on grand schemes but also on "apparently humble and mundane mechanisms" – including tools for standardization and labelling. "If political rationalities render reality into the domain of thought, these 'technologies of government' seek to translate thought into the domain of reality […]" (ibid: 32).

Therefore, when looking at politics as an assemblage of government technologies that help translating political thoughts and grand schemes into daily life then we can see "how ordinary objects and technologies are made to speak for politics" (Woolgar and Neyland 2013). Politics is not only social, cultural or economical, it is also material and technological. Ideas and technologies go together and scientific knowledge, technical devices and material arrangements contribute to build up political matters and content. (Asdal 2011: 13).

Standards, being government technologies, might appear to be "neutral, benign and merely technical" but actually they are an "important and growing source of social, political, and economic relations of power" (Busch, 2013 (2011):28). By opening the black box of government technologies like standardized labels, one can unravel the underlying political arrangements, thoughts, discourses, alliances and controversies that went into them. One also has to bear in mind that the understanding and use of these technologies in practice might be different from what their creators had in mind. What happens if there are misfits between standardized technologies and the needs of individuals (Star 1991)? What if the script (Akrich 1992) is understood differently than originally intended? What follows if the conditions, the "'assemblages' of institutions, rules, social hierarchies and tacit understandings have changed" (Paxson 2016: 269)? Black boxes do not always travel smoothly from one historical moment to another. Cracks may appear under the strain of new externalities, calling into questions what is inside (ibid: 269). Certain standards, black boxed at a particular moment in time, might become problematic when the context changes as Dunn describes in her case study on the high rate of botulism in the former Soviet Republic of Georgia, which took place after the massive changes the country underwent in the 1990s. She identified the practice of canning food at home as being the source for the "outbreak" of this food borne disease. In Soviet times food had been canned in factories and people came to assume that their food was safe even though they did not know much about how it was done. This trust in canned food became potentially lethal when the canning industry was replaced by often insufficient home-canning technology (Dunn 2008). Here the black boxed, standardized food cans did not travel well into a new context.

Similarly cracks in the black box of the date label appeared once the political, social and cultural discourse about food waste changed from "abundant food and invisible waste" to "waste matters" (Evans, Campbell, and Murcott 2013). Therefore, date labelling is scrutinized today as being mis-interpreted, misguiding or even bio-politicising (depending on the view of the author) by the media, activists, politicians and even the food industry. The date label, introduced as a standardized government technology to help consumers and the market deal with the unruly materiality of food, had irrational consequences, unforeseen by those who *in-scripted* the regulating and standardizing powers into the *little date on the package*. Rather than merely passing "neutral" information about the remaining

shelf life of food, the date label changed the ways in which actors along the food chain generally judge and value food.

5.2.3. Constructing value

When looking at the *social life* (Appadurai 1986) and the biographies of things one does wonder "how does the thing's use change with its age, and what happens to it when it reaches the end of its usefulness?" (Kopytoff 1986: 67). By looking at these biographies important insights can be made salient that otherwise would remain obscure. Looking at commodities, Kopytoff identified value and value equivalence as "a philosophical conundrum in economics" (ibid: 71). The date label, shelf life has all to do with food products' biographies and our perceptions of value and waste.

The emerging field of *Valuation studies* and the assumption that the quality and value of a thing or a product are not given or natural but constructed is a promising line of inquiry which I make use of in this thesis. The following definition sums up *Valuation studies* best:

> The mission of *Valuation Studies* is to foster conversations in the new transdisciplinary and emerging field of studying valuation as a social practice. This field is interested in examining practices and settings where the value or values of something are established, assessed, negotiated, provoked, maintained, constructed and/or contested.[28]

Especially in my second paper I draw on these ideas and furthermore on the assumption that value is not given or static and that quality should be viewed as

> complex assemblages of political-economic, cultural, and bio-physical relations. Quality is neither a subjective judgement (what people like), nor an objective measure (the characteristics of a commodity), but is produced within relations of commodity production and consumption. (Mansfield 2003: 11)

Still, however constructed it might be, quality does not come out of thin air, it is a "hybrid of social construction and physical realities" (Feltault 2009). The shelf-life of milk cannot be

[28] https://easst.net/article/valuation-studies-presentation-for-easst-review/

prolonged indefinitely but depends on the milk's physical materiality. According to Callon et al., products go through "qualification processes" in which qualities are "attributed, stabilized, objectified and arranged". "Intrinsic properties" (a product's characteristics) and "extrinsic attributes" (measurement, evaluations and judgements) are combined to define the quality of a product (Callon, Meadel, and Rabeharisoa 2002). Milk, the empirical example in this thesis, is initially qualified buy its intrinsic properties (fat, protein, cells etc.). However, when it leaves the dairy facility, the extrinsic attribute expiration date renders the intrinsic properties it was built upon invisible and remains one of the main qualification parameters of the then packaged and labelled product. The intrinsic properties "become qualified, standardized and certified" and "a source of power for those who control them" (i.e. producers) (Renard 2005: 419) – intrinsic natural lifetime becomes externally attributed shelf-life time.

This understanding of value and quality means that I cannot completely adhere to the value concept given by Heuts and Mol: "Here is the lesson: valuing does not depend on fixed variables" (Heuts and Mol 2013: 141). They argue that valuing "does not fit into inclusive formal schemes" (ibid: 125). This might be right in many cases (as in their case study about tomatoes, which do not have a date label) but in my research about milk I found that certain quality standards, like the expiration date, set a certain parameter of quality and value throughout the rest of the lifetime of a product rather than keeping it open to changing evaluations and notions of care by different actors along the food chain (retailers, transporters, consumers etc). These established standards "structure our expectations, because standards, like the world of nature, are seemingly 'supposed' to be the way they are" (Busch, 2013 (2011): 33). Due to the pre-set expiration date the value of a food item decreases throughout its (shelf) lifetime and cultural biography (exceptions are wine and other alcoholic drinks and certain cheeses) until the expiration date tells the user that at a certain date a product has changed from valued object to waste:

> Different classifications, valuing regimes, practices, and uses, enhance or elaborate different material qualities in things […] actively producing distinctions between what will count as […] a wasted thing or a valued object. (Hawkins 2006)

However rigid they might seem there is some flexibility in these standards (see Paper Two). Furthermore, things and circumstances change and therefore these black boxed standards for qualification and evaluation can change. Changes in the needs, issues, ideas and values of a society can open cracks in the black box and make technologies and entailed stakes visible and open to critical re-consideration (Helgesson, Krause, and Muniesa 2017: 3). Then the question is, what does a society value, what does a society need? This brings me to the fourth and last theoretical resource.

5.2.4 Constructed needs, emerging issues

Needs refer to what is essential, indispensable in life – they are more than just wants or things we would like to have (Soper 2006; Graber 2007; van Lente 2010). However, "needs, in short, are not just abstract and basic, but complex, historically developed and highly socially mediated at the level of actual satisfaction" (Soper 2006: 360). There are those, like Maslow (1943) or Doyal and Gough (1984) that claim that (at least basic) needs are universal and that there is a bare minimum to the human condition that has to be satisfied. Others take a more constructivist and relative approach. In his work on poverty in England, Townsend stated that "the necessities of life are not fixed. They are continuously being adapted and augmented as changes take place in a society and its products" (Townsend 1979: 17). What is defined as need is "not abstract but socially located and organized" (van Lente 2010: 13). A popular saying is that need is the mother of invention but if we look at many modern needs, for example the internet, the need might not to be found at the beginning of an innovation but rather at the end. As a side project of the trajectory of innovation need is created by the inventors or by policy makers in order to create a market for inventions or a basis for political action (ibid: 16).

Many might argue that this is true for things like mobile phones or the internet but how about more basic needs like water? Nobody wants to deny that there is not a universal, essential necessity for water among humans – however, how much water do humans need, of what quality, at which price and who decides all that? Frédéric Graber (2007) discusses these issues around the case of the water supply system in late eighteenth and early nineteenth century Paris. He describes the different approaches towards a new system, based on either the present or ideas about the future. The concept of need that was applied was based either on the knowledge of what *is* (and then focusing on either the estimated

demand or the supply side of water), with experts and engineers telling the state what would be best; or it was based on knowledge about what *ought to be,* where estimates would depend strongly on political intentions, ideals and norms that would then be applied in practice by engineers rather than the other way round.

This idea that even basic needs are not just out there but have to be defined and constructed can be applied in other domains of policy making as well. Particularly the question of *how much* is needed and how do we *satisfy* this need? How many needs can we afford (van Lente 2010)? The way how people in the affluent and over-developed nations satisfy their needs, contributes to the basic need deprivation in other parts of the globe and those of future generations (Soper 2006).

> […] the processes through which we enlarge our choices, and reduce those of others, is largely invisible to people in their daily lives, although understanding this process is central to our ability to behave more "sustainably" (Redclift 2005)

What if certain needs, for example the need for food quality and safety and the need for (environmentally and economic) sustainable food production and consumption, are competing – if they become part of a *wicked problem* (Rittel and Webber 1973), where it is hard to distinguish between correct or false and there might be no optimal solution? Changes in needs and changes in values occur on a societal, political but also a material level. Changes in societal needs and values often lead to changes in political issues. STS with its focus on human and non-human actors conceives issue-formation less as a mobilization of just symbols and ideas (discourses) but as "intervening in 'collectives' or 'life worlds' that include associations of material and social constituents" (Marres 2007: 762). Something becomes an issue if it is being questioned or broken open, if it cannot be taken care of by management as-usual (Lippmann 1922). The current discussion about the unsustainability of date labelling opens up questions about how much freshness consumers need and how to match and harmonize needs for food quality and consumer information with needs for a sustainable food industry. One needs to look carefully how and what kinds of issues emerge and which effects they have on the objects they concern (Asdal and Marres 2014). Changes in ideas but also in needs and values have led to today's competing issues of environmental

sustainability and food quality both being rooted in but also touching upon the materiality of food they wish to address.

5.3. Conclusion

I use this analytical toolbox consisting of standardization, governmentality studies, valuation studies and constructivist ideas about needs to analyse the construction, practice and consequences of the date label of food over time. The concept of need as being politically and socially constructed rather than given is the backbone of the cross-cutting analysis where I follow how the need for safe and fresh food first had to be "created" among the consumers of the 1960s and 70s while since the 2000s the realization of a need for sustainability in food production and consumption might be rising in parts of the (political) population around the globe but has to be instilled into others. By standardizing the unruly life expectancy of food through the date label, the need for consumer information about food safety and quality has been satisfied. This however had consequences that the makers of these standards did not foresee. The *little date on the package* got that influential that the whole food chain relies on it in a rather unhealthy, environmentally unsustainable way. Therefore, I ask in my analysis: how much freshness is needed? Food quality and safety are undeniably basic needs but who decides what is safe, healthy and appetizing and on what grounds? In an over-valuation of freshness and an over-developed need to avoid risk and disgust, our modern food chains and foodways have left producers, retailers, consumers, politicians and bureaucrats with the wicked problem: quality or sustainability? The black box of the (still necessary and valuable) government tool expiration date is cracking open, revealing underlying interests and politics.

6. Time, Needs and Value – scripting and re-scripting the date label in Norway

When taken together the three papers form a timeline. Paper One is situated in the past, giving a historical account of the legal *construction* of the date label. Paper Two is concerned with the present and how the date label is *practiced* by different actors throughout the food chain. The last paper then deals with the *consequences* of the date label and how different actors want to address the issue of unsustainable food production and consumption in the future. Each paper emphasizes one aspect - *construction, practice, consequence* - of the date label. Still none of them deals exclusively or solely with one of these aspects.

The date label is the subject of shifting societal needs and issues it helped to create. Following the date label through time reveals how this technology has moved from being exclusively a food policy regulation to being part of environmental and sustainability politics, goals and discussions. It has been scripted according to certain needs and assumptions, has been interpreted in different ways and is now being re-scripted - literally and in content and meaning - in an attempt to adapt its use and qualifying forces throughout the food chain and to make the foodways more sustainable.

This analysis is built on the three papers that form the core of my thesis. However, this analysis includes theoretical ideas and empirical data that for various reasons (journal preferences, peer review process, length of paper etc.) did not make it into the articles.

6.1. Making time governable

> A few years ago, we had a typical Norwegian Friday coffee at the office. One of us had gone out to buy frozen strawberries, and then she made smoothies. I woke up and was so sick, right. Then it turns out that thirteen of us got sick.

Ironically this incident happened at the headquarters of the Norwegian Food Safety and Hygiene Authorities in Oslo, showing that food poisoning is still real and persistent. The United Nations have declared the 7th of June 2019 to be the first "UN World Food Safety

Day" calling attention to the dangers of the contamination of food by bacteria, viruses, parasites and chemical substances.[29] Time plays a very important role for the safety of food. As described before, humans often face a dilemma when it comes to food: might this be pleasure or poison (Fischler 1988; Rozin 1999)? A raw oyster, fresh from the sea, can be a wonderful delight, one having spent a long time on land might be a danger to one's health and life. Most food items are ephemeral and perishable and the "matter of food plays an active role in its own status, not least through the changes that it does and can undergo" (Watson and Meah 2013). Some food deteriorates very fast (like meat or shellfish) others lose their characteristics very slowly (like salt or honey). Still it is *inevitable* that food will lose its edibility through time, however, the *speed* and *duration* of this process is often unpredictable (Moran 2015; Mattila et al. 2018). Atkins refers to this materiality of food as being "bloody-minded in its reluctance to be tamed and essentialized" (Atkins 2011: 74). This unstable matter of food creates risk and uncertainty.

This uncertainty about the safety and quality of the food has increased considerably during the last century due to major changes in the way food is produced, packaged and sold. Food does not come directly from farmers, local markets or small grocery stores anymore but is delivered to the plate by a long, integrated and complex supply chain (Kjaernes, Harvey, and Warde 2007). Due to the industrialization of the food production, the supermarket revolution and globalization, the distance between *field and fork* became too vast for consumers to understand and relate to (Sassatelli and Scott 2001; Poulain 2017 (2002); Eden, Bear, and Walker 2008b; Myrvang 2009; Zachmann and Østby 2011). The sensory knowledge about food quality that consumers previously could rely on is not very useful when confronted with frozen, canned or vacuum-packed food.

Knowledge about quality plays a central role in the functioning of the economy and markets as it is hard to enter trade if qualities are uncertain (Le Velly, Mallard, and Goulet 2015) – but this is what consumers of modern, packaged food products often have to do. In Paper Two I describe how milk is "black boxed", keeping the consumer out of reach of its content until opening the package at home. This is true for many products sold in supermarkets and stores. To deal with this un-known content, consumers needed new means of knowledge transfer and information in order to trust the seller that what they buy

[29] https://www.who.int/news-room/detail/06-06-2019-food-safety-is-everyones-business

is worth their money. Consumers know that milk will go sour over time, this is inevitable due to the matter of milk, but with industrialized, packaged food they do not know anymore how close to sourness the milk in front of them is.

Something had to be done but in order for the authorities and producers to meet these needs something else was needed and that was a change from *caveat emptor* to *consumer is king.* In many parts of the Western world, including Norway, this change came about after the WWII (e.g.,Myrvang 2009). At that time a real sense of the need for consumer protection and consumer rights began to emerge as this quote from an OEEC paper from 1954 shows[30]:

> […], consumers are basically amateurs when it comes to judging qualities, and they are entitled to protection and guidance to ensure that competition between producers and traders results in a fair price / quality relationship and that consumer ignorance is not abused.

This paper acknowledges that consumers cannot evaluate products properly, need help to do so and they need protection from fraudulent practices. In Norway this increasing concern for consumers' rights and needs manifested itself in the establishment of the *Consumer Agency* (*Forbrukerrådet*) in 1953[31] and the *Ministry of Family and Consumer Affairs* (*Departement for Familie og forbrukssaker*) in 1956.[32] The beginning was not easy for these institutions. They were ridiculed for being "housewife-organizations"[33] or "the most useless of all ministries"[34] and they first had to establish both a clientele and a need for their existence. In 1958 the Agency started to publish its own journal, which was well distributed among Norwegian households at the time (145 000 subscriptions in 1965). When looking through the articles of the early days it becomes clear that the Agency was actively educating consumers to change them from what bluntly could be called *ignorant buyer-*

[30] "Productivity in the Distributive Trade in Europe. Wholesale and Retail Aspects" (published by OEEC, Paris 1954), OEEC – Organization for European Economic Co-operation.
[31] https://www.forbrukerradet.no/
[32] http://www.nsd.uib.no/polsys/data/forvaltning/enhet/15000
[33] Interview Åse Fulke, Frøya, October 2017
[34] VG, 5th January 1965

citizens into *well-informed consumer-citizens.* Consumers were advised to spend their money consciously and cautiously and to *vote with their fork* (Rem 2008)[35].

> It is the consumer's task to direct and lead the production by their own demand. […] Every crown we deliver over the counter should be a vote for what we want produced - and thus we should also be able to influence our prices (Forbrukerrapporten, October 1958).

The Consumer Agency was supported in this demand of "quality for money" and right for consumer information by the Labour Party (Arbeidspartiet, AP). Guri Johannessen (AP), head of the Social Committee (sosialkomiteen) who prepared the 1968 Law about Labelling of Consumer Goods argued during a discussion in parliament: "[…] consumers have a right to get basic information about products, and there is a need for regulations that primarily focus on consumers' interests, "[36] I describe the long path to the legal implementation of the date label at length in Paper One, so here I present only some analytical insights about this process.

The legislation for food labels in general and the date label in particular sprung from the idea of the make-ability of society and a strong "technocratic optimism" assuming that science and technology could solve most of humanities' problems (Myrvang in Myrvang et al, 2004). The standardized date label became a high-modernist (Scott 1998) tool against the natural forces of food decay and food poisoning caused by microbes that grow over time - numbers (dates) were used to reshape nature (food) into measurable and calculable units (Asdal 2004, 2011).

It is "through technologies that political rationalities and the programmes of government that articulate them become capable of deployment" (Miller and Rose 2008: 63). By translating issues, needs or problems into indirect means of intervention, or *government technologies* (e.g., techniques of calculation and assessment), authorities can act upon the practices of individuals and collectives in places that are very distant from the centres of government (ibid: 16). By standardizing the lifetime of food into shelf-life time

[35] Taken from Rem: *Å stemme med gaffelen* (vote with the fork); title of chapter in Asdal and Moser eds (2008), *Ekspertise og brukermakt.*
[36] Input by Guri Johannessen during the 112. Ordentlige Stortingsforhandlingen i Odelstinget, 3rd of May 1968.

the date label became one of these apparently humble and mundane government technologies which made the perishability of food "effective, predictable, calculable and manageable" (Ritzer 2000).

By doing this the authorities did not only literally inscribe a date on a package, but they also *inscribed* a certain content, a vision of how future users should use the label, planning a certain relationship between the user and the technology and setting a path for the future actions of users (Woolgar 1991a; Akrich 1992). Two different versions of the date label were created, each with a different wording and meaning: *use by* and *best before*. The *use by* date was set to inform consumers about food safety. This version of the *script* told consumers that once this date had passed, a food item should not be eaten but be discarded as it was potentially not safe to eat anymore. The other version of the *script*, the *best before* date informed the user that, according to the producer, the qualities (smell, taste, colour, content etc.) would be at an optimum before the date has passed. This date was meant to let consumers know that now the food item might not be at its best anymore but most likely it could be consumed without posing a danger to a person's health.

The date label was constructed and implemented as a technology to make it easier for consumers to distinguish between safe and unsafe food (*poison*) on the one hand and between optimal and sub-optimal (*pleasure*) on the other. What was not foreseen by the makers of the date label was that consumers would re-interpret the scripts and merge it into one – treating the quality related *best before* date like the safety related *use by* and therefore discarding of perfectly edible food items (Tsiros and Heilman 2005; Abeliotis, Lasadiri, and Chroni 2014; Aschemann-Witzel et al. 2015; Stilling Bilchfeldt, Mikkelsen, and Gram 2015; Yngfalk 2016a; Lind Melbye, Onozaka, and Hansen 2018; Wilson, Miao, and Weis 2018; Mattila et al. 2018; Yngfalk 2016b). In Paper Three I describe how this misinterpretation is connected to growing amounts of unsustainable food waste. In order to re-educate consumers about the meaning of the *best before* date and to prevent them from throwing away food prematurely, efforts are being made in Norway to re-script the date label (*best before [date] often good after.* It is not clear yet if these efforts will lead to a new interpretation of the date label and a reduction in food waste, as the original misinterpretation of the script developed hand in hand with a growing need for freshness

among consumers, which might require a more far-reaching and in-depth approach by government and industry than simply re-scripting the date label.

6.2. "I am not needy, I am wanty" – a growing need for freshness

> As consumers we are less and less responsible. Consumers want to have more and more information, from freshness to gluten. Now it is the responsibility of the label. This has nestled itself as a claim now.

This statement of one of my informants from the interest organization Matvett[37] sums up today's consumers' attitudes very well. The responsibility for judging the quality and freshness of food has moved from the senses to the label. According to media, scholars and my informants, the date label has become completely embedded in society and the marketplace. Today many consumers base their decision to eat food or throw it out on the date on the package – often disregarding the different intentions behind the scripts *use by* and *best before*.

This has not always been like this. When telling my mother in law about my research she simply told me: "when I was young food did not expire*".* One of the answers I got for the open questions in the consumer survey corresponds: "I think that young people throw away more food than the old ones. They look more on the date than old ones. I check food. Milk you can use much longer than the date and I just smell it." These two statements are confirmed by scholarly findings that younger people are more likely to waste food that they deem as not fresh anymore (e.g.De Hooge et al. 2017).

The need for fresh food is legitimate and persuasive. Most consumers today would not like the situation people encountered in Norway in the 1970s:

[37] The food and catering industry's interest organisation for the reduction of food waste. The company was founded in 2012 is owned by the Interest Organisation of Food and Beverage, the Foodservice Suppliers Association (DLF), the Grocery Store's Environment Forum and Interest Organisation Tourism. Its main goal is to reduce food waste in Norway. http://www.matvett.no/om-matvett

> And then in the shops out here on the islands in the 1970s, the potatoes were old, and everything was old like that, because there was nothing else. And the milk bottles were standing out in the sunlight.[38]

At that time, when people were used to eating old potatoes, agencies, authorities and political parties had to put considerable effort into making people aware that they "need" fresh food and correct information as "there were no consumer marches demanding date labelling in the 1970s in Norway."[39] The need for a date label had to be actively created and then spread among the consumers. This was done by the Norwegian Consumer Agency through their journal, pamphlets etc. against the intentions of a powerful food industry. During an interview with the manager of a supermarket I learned that his former boss thought that the implementation of the date label, especially for products like potatoes or eggs, was the "stupidest thing he had experienced in his whole professional life". Even among the authorities there was doubt: "I had an old colleague who thought that we would go hungry in Norway due to the date labelling," an informant from the Food Safety Authority told me. Freshness did not have the same status back then. Laudan (2001) argues that today the need for "fresh and natural has become an article of faith" (ibid: 36) but this is "a latter-day creed". The need for freshness, like the need for date labels had to be created by the food industry, food writers, bloggers, media, politicians etc.

Even basic needs are not universal, natural or static, but they are subject to context, change and political will (Soper 2006; Graber 2007; van Lente 2010). The date label and the ideas about the freshness of food (connected to safety and quality) are a good example of this. The process went from consumers and authorities being unaware, to realizing the need for information, to establishing the food label regulation against competing ideas, to a claim for increasingly detailed information and a growing need to avoid food risks at any cost as the following quote shows:

> My sister does not trust her eyes or nose, she does not know how to look and smell and she says: we cannot afford the doctor.

[38] I have used this quote in two of the papers as it is so speaking of how things have changed.
[39] Interview Åse Fulke, Frøya, October 2017

It is valid to state that safe food is a need, the question is then: how safe does food have to be? Ideas about what is safe to eat for how long change over time (often due to technological improvements) as these two examples show. Originally milk was considered a highly perishable product, considered dangerous to consumers' health when past the expiration date and therefore needing a *use by* date. Then in 2008 the health and hygiene authorities re-classified milk as a regular product, considered to deteriorate in quality, not safety, and therefore labelled with a *best before* date. The argument for this change was that this new classification of milk was more conform with the technology of the time (which made milk less perishable) and with regulations in neighbouring countries.

With eggs it went the other way. According to EU and EEA regulations eggs have to be labelled with a *best before* date of 28 days and a *sell by* date of 21 days. This is because in several EU countries eggs are not kept refrigerated and there is the danger of contamination with Salmonella Enteritidis (Møller et al. 2014). However, as many researchers, authorities and retailers told me, this regulation is over-protective and not appropriate for Norway as here eggs have to be refrigerated throughout the whole food chain (and are refrigerated by most consumers). Furthermore, contamination with Salmonella is extremely rare in Nordic countries. When looking at these cases it becomes obvious that the need for food safety cannot be considered given or static, but rather it is constructed (in the case of eggs despite local differences) and changing over time.

Even more dependent on context (time, locality, eye of the beholder) is the need for fresh food. According to Freidberg (2009) by the turn of the twentieth century - due to the discovery of bacteria and vitamins - traditional ideas about the benefits of "freshness" changed substantially and we have come to

> see freshness as a quality that exists independent of all the history, technology, and human handling that deliver it to our plate – a quality that, ironically, transcends time and space precisely because it is sensitive to both (ibid:17).

Authors like Freidberg show that what consumers consider fresh food today is the outcome of historical processes and technological inventions like refrigeration or

pasteurization. According to her and other authors (e.g.,Finstad 2013), these technologies were not accepted right away but had to be learned and accepted by the consumers. The slow acceptance of the expiration date which I describe in Paper One is another example of how technologies that were refuted at first became a need over time. Today, our perception of what is fresh generally depends on these refrigerated, pasteurized and date labelled products. "Processed and preserved foods kept well, were easier to digest, and were delicious […]" (Laudan 2001: 38). I do not want to argue that consumers in earlier times did not prefer fresh food over old produce, however, what is considered fresh and edible is not only dependent on food culture or habits but also changes over time as this quote, taken from the open questions of the survey, shows:

> In the old days we put milk into the window so with the heat of the sun it would get sour and then we ate it with honey. Then we wanted to have the milk that way, today they throw sour milk away.

My grandmother, who had to feed three little boys through WWII, considered a strawberry that was half-covered with mould a half-edible strawberry. This kind of behaviour, learned in times of scarceness and want, disappeared after WWII in the Western World as "in world of excessive and cheap food, it is not difficult to imagine frugality and careful household management offering a poor fit with the 'zeitgeist' of the Cold War food regime" (Evans, Campbell, and Murcott 2013: 15). Furthermore, the knowledge of how long food keeps disappeared as this statement of a younger colleague of mine shows:

> At home my father knows – I don't know. I had rice at home and did not know if it was still good, so I googled it and they said it keeps this and this long. So, I threw it away.

Today's consumers have high expectations about the food they want to buy (De Hooge et al. 2017). During my research I encountered a campaign by a supermarket chain that was called "Do not let one rotten apple destroy it for the rest". Fruits and vegetables that were not corresponding with the standards for freshness were moved to a special box and sold for cheap. Consumers, however, did not seem convinced that they could trust

the “rotten apple” and the campaign stopped after a few months. Consumers today often do not want to purchase, or even encounter food that might potentially be disgusting to them. During my research several people mentioned disgust in connection to date labels. This quote serves as an example:

> I am one of those who throws away food immediately once it is out of date. I know I can smell it, and I do that, but once it is expired, I feel it smells bad and the carton is looks blown up.

For this consumer the product was experienced as disgusting (“smells bad”) not based on a sensory experience but based on the passing of the expiration date alone and the passed *best before* date serves as a legitimization for throwing away potentially edible food. Another person told me that ever since she by accident drank “rotten” orange juice from a carton she has problems trusting a product that is out of date. The one-time disgusting experience comes back to mind and she prefers to discard the whole box rather than testing it (even though she feels bad about wasting food).

For Darwin disgust meant something “offensive to the taste” (Darwin 1965 [1872]). Today, rather than having to test or taste potentially disgusting products, many consumers leave the (moral) decision about the freshness of food to the *little date on the package* and discard food once the expiration date tells them to do so. The need for freshness, safety and information has led to the need for a standardized date, telling many consumers when to eat and when to throw away food. As shown above this need can be found at the “juncture between what is organically determined and what is subjectively experienced” (Soper 2006: 359).

There is an organically determined need for freshness due to the materiality, still this need is not natural but subjectively experienced and socially and culturally constructed. The examples above show that the need for freshness has changed over time; it is culturally determined (in China “thousand-year-old eggs” are considered a delicacy, in Norway most people would find them disgusting) and it can be contested even within one location or culture. Soper reminds us that needs “can be contested by those to whom they are imputed” (ibid: 359). Dumpster divers, defying expiration dates,

contest the normative and standardized idea of what is waste and what is still edible, valuable food (Evans, Campbell, and Murcott 2013; Yngfalk 2016a). Most dumpster divers do not contest the idea of food safety, they merely expose the concept of "freshness" as being constructed, question the need for fresh food and find value in out-of-date food. Through the date label the need for safe and fresh food connects to consumer's ideas about a product's value - as fresher products are generally valued higher[40] as the next section will show.

6.3. Fresh today, bad tomorrow: quality and value along the food chain

"Look at bread, fresh today, bad tomorrow." This quote from a manager of a large supermarket shows how ideas about freshness of food and ideas about quality are connected and co-constructed. Several authors show that a consumer's perception of quality declines as the expiration date approaches (Theotokis, Pramatari, and Tsiros 2012; De Hooge et al. 2017; Whitelaw 2014). Depending on their freshness, products are valued, compared and prioritized.

> Valuing a good consists of carrying out a decoupling in relation to its singular properties, and a characterization designed to enable prioritization, comparison, evaluation and calculation (Le Velly, Mallard, and Goulet 2015: h)

This definition of (e)valuation is useful when thinking about the date label and how it made the natural perishability of food effective, predictable, calculable and manageable for both the market and the consumer. It helps consumers who have lost the knowledge, ability and means to judge the safety and freshness of packaged and "black boxed" food and it ensures a smooth working of the market. However, it also renders many other intrinsic properties of a food item invisible in a way that after the date is printed on the package it becomes almost the sole parameter for quality and value of a food product.

In my second paper I describe how the value of milk is dependent on the expiration date and how different human and non-human actors are entangled and connected via the expiration date throughout the whole milk chain – *from the udder to the gutter* - on the one

[40] Exceptions in Norway are wine, spirits and certain types of cheese.

hand co-constructing the expiration date, and on the other being strongly influenced by their own construction. Based on the idea that quality is not a given but constructed, as outlined in the theory chapter, I argue that, due to date labelling, milk changes from being an "anonymous timeless entity" to a "traceable commodity" and that "natural lifetime" is changed to "standardized shelf-life time". At the beginning of its social life (Appadurai 1986) time does not play the most important role in the evaluation of milk. Milk is not picked up every day in Norway, and my interview partner at the farm told me that it is temperature, number of bacteria, cells and protein that are the most important parameters by which the milk is valued and priced, not the age. Later, in the dairy facility, the milk's lifetime starts to become more important as fresher milk is used as drinking milk while older milk is fermented into yoghurt. Furthermore, dairy plants strive to keep the milk inside the facility for as little time as possible. However, once the milk is filled into the carton, the box is sealed, and the date printed onto it, the *little date on the package,* renders many of the properties, which have been used for evaluation and qualification before, invisible (Callon, Meadel, and Rabeharisoa 2002). For the rest of the milk's life its standardized shelf-life time becomes the most important qualificator and evaluator for its freshness, edibility and (monetary) value. At this moment, the race against time truly begins challenging producers, retailers but also transporters. This has not only to do with the perishability of the product milk but also with geography and demographics, which are particularly challenging in a long and sparsely populated country like Norway. I describe these challenges at length in Paper Two.

Making the standardized shelf-life time of food even more challenging is another standard, namely STAND001[41], which defines how many of the 14 days of the milk's shelf-life time are allocated for transport, wholesale, retail and consumer. If the milk misses the assigned date marker it is in danger of being wasted, as it is considered not fresh enough anymore. To avoid this waste of not just milk but also money, business partners often make agreements bypassing the strict STAND001 rules. The over-age milk is generally sold at a lower price. The same happens at the supermarket, where milk with a short remaining shelf-life is down-priced to attract price-oriented consumers. This down-pricing along the food chain shows how the monetary value of milk is directly related to its remaining shelf-life

[41] https://www.stand.no/articles/134-tabell-for-fordeling-av-total-holdbarhetstid-pa-en-vare/#top

time. This is based on the idea that fresh means high quality as this quote from the quality manager of a large food producer and supermarket chain shows:

> Quality is a tricky balance. It is an illusion, I think, thinking that consumers would eat food that they do not think is nice. We are such an affluent society that I do not believe that Norwegian consumers would eat food that they do not experience as good. And if you have a shop that is full of old products, it is another supermarket chain that will survive.

Another manager told me that sometimes producers deliberately shorten the shelf-life of products to make them artificially appear "fresh"[42] (here the informant talks about ham, not milk):

> This has to do with consumer expectations and how they are guided by the producers. If you present yourself as the producer of "fresh" products, you cannot sell products with a shelf-life of four months or so. So, they reduce the time to make them seem "fresh".

The shorter the shelf-life time the fresher the product seems and the more likely it is to be valued and bought is the reason behind this date setting. During my interviews with the milk producers the opposite was described, showing that dairy facilities had invested a lot in prolonging the shelf- life time of their products by using modern packaging methods, good refrigeration and high-tech machinery. Given the challenges they face with getting the milk to the shelves and the consumers on time these investments make sense: milk sold at a high price makes economically more sense than a reduced one because the *best before date* was reached.

In Norway it is lawful to sell products after the *best before* date, but no retail chain does that (yet), as they are afraid for their image (so they told me). Many, however, give away products with a very short or sometimes even expired shelf-life to food banks

[42] Here it is important to note that in Norwegian ferskvare – fresh produce – means not only that the product is fresh as in not-old but also that is delicate, perishable.

who then give it to people in need. The question is then, if that food is good enough for the poor, why can we not all eat it? Again, we see how freshness and value of food are dependent on time and context and how thin the line is between value and waste. Food is constantly in danger of becoming waste (Watson and Meah 2013) and this can happen at any stage of the food chain. If and when food becomes waste, however, is dependent not only on the material characteristics and intrinsic properties of food but also on practices, habits, values, needs and actions of those who produce, transport, sell, prepare and eat food. I have shown how the need for freshness has been created and how ideas about freshness are connected to how food is valued along the food chain. In the next section I will show how the combination of an (over)valuation of freshness together with the misinterpretation of the best before script have moved the date label away from pure food policy making and into environmental politics. Changes in needs and issues have led to this shift and a re-scripting of the date label as both Paper Three and the next part of this analysis will show.

6.4. Changing issues: safe food regulation or environmental sustainability?

Food waste, especially food waste caused by the date label, is the underlying issue and socially relevant starting point in all three papers. Many scholars have shown how consumers trust the date label when it comes to judging and evaluating the safety and quality of food. This trust in the label is connected to trust in the state, its institutions and its standards. Consumers often do not and cannot exactly know neither how the food came to their plate nor how the standards about food safety were created. Still they trust the state and its standards (Dunn 2008). Consumers in Norway (and elsewhere) do not exactly know how the date is set, but they trust it because they trust the responsible institutions. In their comparative analysis about trust in food across Europe Kjærnes, Harvey and Warde (2007) describe the Norwegian people as generally trusting state institutions. Due to this trust in the state they also trust the date label's advice when to discard of food. This leads to a lot of waste. As shown before, consumer food waste makes up 58% of the total amount of food waste in Norway (Elstad Stensgård et al. 2018). In the questionnaire that I conducted, 34% admitted that they throw away or have thrown away food based on the date label alone. This outcome was neither desired nor expected by those who constructed and envisioned a

certain use and user for their script. "[…] it may be that no actors will come forward to play the roles envisaged by the designer. Or users may define quite different roles of their own" (Akrich 1992: 208). This confrontation between real user and intended use, in-scripted in the technology might lead to misinterpretation or re-interpretation of the script. In the case of the date label, unforeseen but its creators, who intended to inscribe a better distinction between food safety and food quality, the confusion of the two versions of the script leads to wasting edible and valuable food resources.

This wasteful behaviour is not sustainable neither in Norway nor on a global scale. According to the UN Sustainable Development Goals[43] the food sector counts for 30% of the world's energy consumption and about 22% of the green-house gas emissions. Therefore, Goal No 12 states that by 2030 the per capita food waste on the retail and consumer level should be halved. Here I come back to ideas about needs and values. In our affluent Western societies, the value of food has gone down dramatically since WWII while consumption has gone up. In Norway, private consumption almost tripled in the 1950s and 1960s while expenses for basic goods like food declined steadily: from two thirds of the household budget in 1947, to 35-40 percent in the 1960s to a little over 10 percent today (Lange 1998; Eriksen 2012).

Most of my informants, not only from the industry but also from the authorities and NGOs, expressed that easily available, cheap food is the main reason for food waste. People plan badly, they buy too much and do not eat their purchases before the end of the shelf-life is reached. This behaviour combined with little knowledge or time to preserve surplus food means that edible food is easier wasted than before. The misunderstanding of the *best before* label then accelerates this process as people deem the food unsafe to eat, based on the misinterpreted date on the label. This discarding of products before they are "used up" is part of today's "industrial logic" (Myrvang et al., 2004: 203) This "logic" combined with an increased need for safety and freshness leads to environmentally unsustainable consumption and a need for change.

The definition of (environmental) sustainability given in the report of the Brundtland Commission (Our Common Future) in 1987 is still a very valid one:

[43] https://www.un.org/sustainabledevelopment/sustainable-consumption-production/

> Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland-Report 1987)

According to this definition and the UN Goals it is hard to deny that as a society we need environmentally sustainable food production and consumption. However, it is also hard to deny that as individuals, consumers need food safety and quality for money. The question is then how to combine these two? First, consumers would have to feel the need for sustainable behaviour, like they developed the need for date labels. In order to raise awareness for the need for more sustainable behaviour and to change consumer practices the date label in Norway is being re-scripted. *Best before* is accompanied by *often good after.* In the minds of the creators of this additional script this re-scripting should change the attitude and the behaviour of its users and therefore fit better to the needs and issues of the time (see paper three). There are no concrete numbers yet about whether the re-scripting of the date label is having the envisioned effect. It would be interesting to do more research on the real-life effects as the survey that I conducted showed that 77% of the respondents think that this addition describes the date label better, and 63% felt saver to eat out-of-date products. In any case the media attention that these efforts received most likely will have an impact. There have been several newspaper articles, social media exposure and blogs and even international news about the topic and both Sweden and Denmark will follow the Norwegian example.

I have described these processes at length in Paper Three so here I turn the focus towards how these two – potentially competing – needs and issues relate to each other and together form a *wicked problem* (Rittel and Webber 1973) that is hard to solve. Above I have described how a growing need for freshness puts pressure on the shelf life of products all along the food chain. This need for freshness is often coupled with a need for diversity as this quality manager of a supermarket chain laments:

> When thinking about food waste it is very counterproductive to criticize the limited assortment of products here in Norway at the same time. It is counterproductive to add more and more different products that not many people will buy.

Miller described that part of the aura of modern life is an ever growing scale and diversity of products in the marketplace (Miller 1987). This development cannot be denied. When looking at the milk shelf at the local supermarket one can find: milk from three different producers; milk from cow, sheep or goat; organic or non-organic milk; full fat, semi-skimmed, skimmed and ultra-light milk; milk powder and UHT-milk; lactose free milk and then animal milk substitutes like soya milk, oat milk, almond milk etc. – and this in a country where arguably the assortment is very limited compared to for example the United States. All this milk has to be fresh and preferably far from the expiration date as many consumers will dig deep into the shelves to find the milk with the longest remaining shelf life as several informants told me.

As shown above there is a strong connection between the need for freshness and the need for quality – but how can this be combined with the need for sustainability? Neither quality of food nor sustainability of its production can be argued away as being superfluous or needless. Is it possible for producers, retailers and consumers to reconcile these two needs? In order to satisfy the common need for sustainable production and consumption, individual needs for food freshness, diversity and probably even safety would have to be reduced substantially. Does a critical look at the date label help solving this wicked problem of quality versus sustainability?

6.5. Wicked problems, possible solutions

I have started this thesis by stating that the expiration date, this *little date on the package*, might be a mundane, every-day technology but it also speaks for the underlying politics and policies, discourses, needs and values (individual and shared). Its construction is exemplary for the high-modernist idea of the make-ability of society and that technology, state regulation and standardization would work for the common good. The process of its adaptation is representative for a neo-liberal approach where a reclining state, rather than using strict regulations, leaves decision making and active policies to the market, nudging consumers rather than forcing them. The question is if a supposedly self-regulating market will be able and willing to address the problem of food waste in a sustainable rather than a profit-oriented way.

In this analysis I have looked at the date label throughout history and have shown how the underlying needs – even though based on real necessities – have been shaped and constructed according to the current values of society and needs of this market. In the beginning there was *no need*, no consumer marches, no industry support – still the date label was created and implemented due to the will of the state to do so. Over time the way the date label was practiced throughout the food chain created an *exaggerated need* of it. Producers, retailers and consumers came to rely heavily on the *little date on the package*. The negative consequence of this *exaggerated need* led to a lot of avoidable food waste and the date label has become a *questionable need.* How much date labelling is good for society, the market and the environment?

When looking at the flexibility of the date label throughout the milk chain in Paper Two and the possibility of it being re-scripted described in the Paper Three it becomes clear that the strong connection between the date label and food waste does not have to be an automatic one. The question remains how to solve this *wicked problem* (Rittel and Webber 1973; Närvänen et al. 2020) between the individual need for food quality and safety and the collective need for environmentally sustainable food production and consumption. Most likely, there might not be an easy, one-solution-solves-all approach – just small steps to reduce wasteful behaviour in the long run at every stage in the food chain. Many (popular and academic) people have written about food waste solutions (Aschemann-Witzel et al. 2015; Ekstroem 2015; Aschemann-Witzel et al. 2018; Närvänen et al. 2020). Here is where this thesis gets normative and I offer just a few ideas that might be useful to reduce waste in the future. The strongest focus should be on educating consumers about the real meaning of *best before* and *use by*, this is what many of my informants from the industry and authorities told me. This was backed by requests from consumers from the survey. Understanding the difference between food safety and quality and using one's senses rather than following a label is the priority in many campaigns at the moment. This is important, but I would go further – consumers must realize that their quest for the perfect apple is an unrealistic and unsustainable one. Children should learn from a young age, that a brown spot, a wrinkled leave or a stronger smell are not automatically disgusting but often perfectly edible (within the limits of safety). Furthermore, shelf lives should not be artificially kept short but the longest possible. Diversity and meeting special needs (like

allergies) are important but in a sensible way – we have to ask ourselves is whether we really need sour-cherry and honey-dew flavoured yoghurt or if a simple raspberry one would do. Package sizes should be smaller to meet the needs of smaller households. Children and young people also have to learn the value of food again so that they are disgusted by waste rather than disgusted by food and they have to be trained to plan food purchases rather than over-buying always readily available food. And last but not least – the question is, do we need *a little date on every package*? Most of my informants agreed that no-date would not automatically lead to less waste as people do not trust their senses and even if they would, they could not apply them with industrial food. However, combining educative efforts with a gradual reduction of the date labels on long-lasting products like rice or pasta might lead consumers to rely on senses over standards.

Unfortunately, even after having studied the expiration date for an extensive amount of time, I cannot offer a comprehensive solution to the quality-sustainability dilemma. Still I am confident that a better understanding of how the date label was constructed, how it is practiced and what its consequences are for consumers' understanding of food freshness, quality and value might help to at least reduce its most substantial effect: food waste. Rather than focusing mainly on the role of date labelling as the cause of food waste we should turn it around and investigate further how it could be part of the solution as well.

6.6. Concluding remarks: Food waste and STS

Date labelling and food waste are entangled to such an extent that it is not easy to write about one without also writing about the other. In this thesis I have shown that the date label is more than just cause for food waste. It is a print, a regulation, a (e)valuation tool, and an intermediary between field and fork, changing its meaning depending on social context, time, and space. The date label is simultaneously environmental, political, economic, social, and cultural. After having looked at the many different facets of the date label, I conclude this analysis by going back to the four areas where this thesis contributes to the field of food waste studies (see chapter four).

Food waste studies are a vast and fast-growing area of research within a variety of fields: environmental studies, policy studies, cultural studies, economics, behavioural studies, psychology, and more. It is challenging to find common ground in these diverse

fields both in theory and methods. However, there are shared characteristics within the field: first, food waste is generally the starting point. Second, food waste is often presented as an inevitable, almost "natural", consequence of the date label (or rather the misunderstanding of it). Another common characteristic is the focus on consumers, often omitting producers and other actors along the food chain. The fourth common trait is an emphasis on *either* practices *or* perceptions. Based on these characteristics I identified four areas where further research about the date label would be beneficial to the scholarly discussion. These four areas are: (1) a focus on the construction of the date label in addition to its effects (food waste), (2) attempting a de-naturalization of the food waste/date label connection, (3) broadening the emphasis on consumers towards an integrated food chain approach and (4) connecting the food chain with a food ways[44] approach. In order to address these areas, several concepts (government technology, black box, script, valuation, and wicked problem) from Science and Technology Studies (STS) were used throughout the thesis, thereby adding to the concepts themselves.

6.6.1. Constructing the date label

In paper one, I described how the date label was constructed as a *government technology* (Miller and Rose 2008) in an attempt to bridge the growing distance between industrialized food production and consumers (field and fork). Government often manifests itself through seemingly mundane tools and technologies. By following the date label through time, it is possible to show how the mechanisms of government work in practice, showcasing the interdependencies between political rationalities and government technologies. Through these technologies, the political aspirations and ideas of political and administrational authorities are connected to the lives of individuals, groups, and organizations (ibid: 55). Government then works by "installing what one might term a calculative technology in the heart of the 'private' sphere" (ibid: 67) - thereby steering people towards a preferred direction. The date label is such a technology that exemplifies the use of political technologies to impose certain choices and consumer behaviour - telling them whether a food product is edible or not. Throughout its establishment in 1975, it translated prevailing governmental ideas about food safety and quality into working mechanisms. The date label influences the everyday activities of food production companies, shops, and households –

[44] Food ways are the cultural, social, and economic practices related to food production and consumption

having an impact not only on the market but also on consumers' behaviours and perceptions (see section below).

Throughout time this initially disputed technology became completely entrenched into our daily lives and its intentions and strategies *black boxed.* This transformed the date label into a tool that made most actors of the food chain (producers, transporters, retailers, and consumers) accept and follow the date label without much thought about its implication and consequences. The idea of *black boxing* is less a theory than a concept, which has been applied frequently in STS (e.g.,Pinch and Bijker 1984; Woolgar 1991b; Pinch 1992) to question the "socio-political constitution of scientific objects, knowledge and technologies" (Paxson 2016: 269).

Bruno Latour applied the terminology to the studies of science arguing that that "the more science and knowledge succeed, the more opaque and obscure they become" (Latour 1999: 304) - they are black boxed. The concept of *black box* can also be applied to standardization processes (Lampland and Star, 2009). Standards are means by which we construct realities by "partially ordering people and things so as to produce outcomes desired by someone" (Busch 2013 (2011): 13). The date label is such a standardizing technology. It makes the unpredictable predictable by determining a standardized shelf-life time rather than relying on the natural lifetime of food.

Black boxes and standards can potentially be harmful once they become naturalized, leading users to amplify certain aspects of the world while reducing others (ibid: 74). The date label being established as "a guarantor of good or safe food" (Paxson 2016: 269) had exactly this effect, leading to the unintended consequence of food waste. Studies of government technologies, standards and black boxes have common characteristics: once negotiations, controversies, or political discussions have ended, power relations are settled and the technology in question is closed, stabilised, and black boxed, many researches conclude their investigation. Like this the construction of a technology can appear as a one-time event or once-and-for-all phenomenon rather than an ongoing and continuously changing process of re-negotiation and re-construction.

I argue that in order to understand current practices and technologies it is important to understand where they came from and how they were constructed. However, then the question remains - what happens after? Government technologies have both a history of

construction and one of implementation and everyday use. It is therefore critical not to present technologies as static and closed. They are subject to continuous change and adaptation. I therefore followed the date label further through time, which enabled me to unravel what happened after the political discussions ended and the date label was used on a day to day base.

Presently environmental concerns are part of the redefinition of the expiration date from a food safety and quality warranty to a cause for food waste. Therefore, I then turned towards current events to re-open the black box of the date label. Presently the date label is subject to re-negotiation and re-construction processes that transform its characteristic and properties. By continuously following the date label through time I could take the construction of the date label as a start rather than the conclusion of the analyses. By doing this, I connect to current discussions within the food waste literature. The date label not merely *is*, but it *becomes*; and its move from an accepted and black boxed food policy technology towards an issue in environmental politics exemplifies processes of change and adaptation rather than rigid and static government technologies. In the next section I will describe and further discuss how the connection between date label and food waste is also not inevitably a given but subject to change. It was constructed and can be renegotiated, transformed, and reconstructed.

6.6.2. De-naturalizing the food waste/date label connection

Susan Leigh Star reminds us that "there are always misfits between *standardized* or *conventional* technological systems and the needs of individuals" (Star 1991: 36). In the case of date labelling these misfits unintendedly lead to food waste as frequently discussed in the food waste literature (e.g.,Evans 2012; Watson and Meah 2013; Abeliotis, Lasadiri, and Chroni 2014; Aschemann-Witzel et al. 2015; Stilling Bilchfeldt, Mikkelsen, and Gram 2015; Yngfalk 2016b; De Hooge et al. 2017; Lind Melbye, Onozaka, and Hansen 2018; Mattila et al. 2018). The standardized date label is misinterpreted in its day to day communication with consumers. It stigmatizes older food, and might, as described above, create an excessive need for fresh food. Therefore, rather than taking the connection between date label and food waste as a given, I tried to de-naturalize and problematize the issue by using an historical approach. Throughout this thesis, but especially in Paper Two, I address the potential flexibility of this seemingly rigid government technology. In the paper I described

and discussed how producers, transporters, retailers, and consumers can mitigate some negative effects of the expiration date.

Some authors (e.g.,Eden 2011) define food labels as *boundary objects* (Star and Griesemer 1989). Through boundary objects, communication without consensus can be possible. Depending on the social world they operate in, boundary objects have different meanings for people, allowing the object to adapt to shifting local needs. However, even though there is flexibility and room for negotiation within the date label, I question whether the date label could be framed inside the definition of a boundary object. Being a government regulation, the date label is neither politically neutral nor based on a collective effort (as described in Paper One, other possible solutions were over-ruled by government decisions). Furthermore, communication via the date label (even through its recent addition described in Paper Three) is generally a one-way, rather than a two-way street. As described above, the expiration date was set in place by government authorities, the actual shelf life is defined by producers, and consumers generally follow the recommendation without questioning its implications (one exception are dumpster divers). This one-way communication connected the date label to food waste as consumers conflate the safety label "use by" with the quality label "best before" (see below).

Based on my empirical findings during observations and interviews, I rather identify the date label as a *script* (Akrich 1992), where certain meanings, visions, and ideas about users' behaviour are inscribed into objects and technologies. These objects and technologies may then "generate and naturalize new forms and orders of causality and, indeed, new forms of knowledge about the world" (ibid: 207). The date label indeed has changed consumers' knowledge about the world in a particular way. In order to make sense of these mechanisms and their outcomes I combined the concept of government technology with the concept of script. The date label exemplifies the concrete outcome of policies being transformed into technologies that prescribe a certain use. In the case of the date label the script is co-constructed by a government regulation (prescribing the wording of the date label) and the food producers (setting the date) whose actions (speed of production and transportation, advertising etc.) are then influenced by their own creation.

In Paper Three, I developed the concept of script further by adding the idea of the *double-script,* where the date label is literally a script, inscribed onto the package,

prescribing a certain use. The "use by" label prescribes the immediate discarding of food as it might not be safe to eat anymore, while the label "best before" prescribes being cautious about the product's quality. However, the meaning of the two *literal scripts* ("use by" vs "best before") were merged into one *prescriptive script* ("throw away") in the minds of many consumers hereby not behaving according to the original vision and meaning inscripted by the date label's makers.

This outcome was neither intended nor inevitable. For decades, the date label would do its misinterpreted prescriptive work without being challenged. This "side-effect" of its interpretation has gone undetected until present. Scripted during the post-war scarcity in Norway, the makers of the date label could not anticipate food waste being a problem, and during the affluent years that followed, waste was not considered problematic by politicians, media, or consumers (Evans, Campbell, and Murcott 2013). Food waste and its causes were invisible. Only the recent turn towards environmental sustainability brought the discrepancy between two *literal scripts* and one *prescriptive script* to light, which led to the questioning of the date label itself. In paper three I show how the date label shifted from being a food policy to an environmental issue. The date label demonstrates the potential for changes within black boxes and illustrates how government technologies originally constructed for one domain (food policy) can cross into another one (environmental policy). This does not mean that the technology lost its original purpose or intention, rather that over time changing actors and issues moved it partially or completely into another realm of governance. In the case of the date label this shift became visible once food waste was identified as an important societal issue. From then onwards the date label was deemed responsible for being part of that scheme.

Countless small shifts and changes in consumer culture, industrial food production, food policy, labelling etc. have brought us where we are today. The current effort of disentangling the merged prescriptive script back into the originally intended two scripts by adding words ("often good after") to the "best before" label show that technologies are neither neutral nor a given but results of conscious decision making by both those who put them in place and those who use them. In a similar way to when the date label was originally constructed in the 1970s, various actors (even though different ones than back

then) have cooperated to transform the date label to benefit the environment while safe-guarding food safety and quality at the same time.

By adding to the script, several producers have shown willingness to make (arguably small) changes in order to reduce food waste. However, these efforts of disentangling the date label from food waste have to be done all along the food chain. In Paper Two I made an effort to show how much flexibility there is within the date label and how this can be used to address the issue of waste.

6.6.3. Integrated food chain approach

While the historical approach allowed me to unravel the making of the date label into a black boxed government technology, the food chain approach provided insights into how this black box operates in practice, directing the behaviour of the different actors along the chain. One should not imagine or portray the food chain as a real chain where things move in a straight line (Belasco and Horowitz 2009; Finstad 2013). The food chain is rather a network of linked actors and locations - each with their own needs and interpretations. Depending whether one interviews consumers or producers, transporters or retailers, the answers about the same technology might vary remarkably. Therefore, we should not restrict ourselves methodologically to collect either the designer's or the user's point of view but go back and forth between them and also between "the words inscribed in the object and the world described by its displacement" (Akrich, 1992: 209).

This is what I did when examining the Norwegian milk chain. My ambition was to show how the date label both influences and is influenced along the way. Furthermore, STS's insistence on the importance of both human and non-human actors made me aware of how the date label is continuously constructed and re-constructed by a variety of (f)actors (e.g., temperature, microbes, technologies, regulations, human actors etc). All these actors together make up the length of the shelf life of a food item. However, in a process of double-black boxing their contributions and even mere existence become hidden from the consumers.

The concept of *double-black box* is rooted in my empirical findings gathered during the food chain research. I further developed the concept of black box and showed that there are different levels of black boxing. The first level of black boxing occurs when the milk carton is closed. Here the activities and processes along the food chain, for example farmers

mistakes, raw milk quality, industrial handling, and regulations are locked off. This physical barrier, a literal black box, then keeps the user from judging the product inside for him/herself. Before that, on another level, happening previously at the laboratory, the natural lifetime of milk becomes black boxed and hidden by standardizing it into shelf-life time.

The different levels of black boxing are intertwined and influence each other. If the industrialization of milk production and modern packaging would not have hidden the milk, the consumer would not need the date label. As this is not the case, users need the date label for information about the freshness of the product in front of them. This affects their daily choices about value and waste (see below). Relying mostly on the prescribed expiration date, consumers become so dependent that following a label comes more naturally than following their own senses. The words inscribed onto the product have changed how consumers experience food. Through industrial food production, the intrinsic qualities of milk are hidden from the consumers (through for example packaging) who then rely on extrinsic, standardized quality parameters. In this the collaboration of the industrial product milk and the government technology date label make it hard for consumers to create an anti-script (exception: dumpster divers), re-script, or find a way around the black box. The thoughts and mechanisms that go into the black box stay invisible to the consumer who then relies on the date label when making decisions about freshness and decay, value and waste. I combined the concepts of black boxed government technology with ideas about quality and how the date label not only prescribes a certain use but simultaneously operates as a valuation tool. Here a food chain and a food way approach and a focus on both practice *and* perception meet.

6.6.4. Food chains and food ways

In our modern, industrialized food production and consumption systems, the expiration date has become what we may call a mediator of time. Myrvang (2009) has described the development of the Norwegian consumer society as being driven and guided by what she calls “consumer agents” (forbruksagenter). These agents, or brokers, mediate between production and consumption. Earlier Latour has reminded us that mediators do not necessarily have to be human (Latour 1988, 2005); but can also be an object, a process, a mechanism, or technology that translates or mediates between various actors and needs. In

the case of the expiration date, the date label translates time. It standardizes the natural lifetime of food into calculable shelf- life time, it dictates the time food can stay within each location in the food chain, and it tells us when it is time to discard food. In doing so, the date label, as a non-human actor, mediates between user requirements (information about food safety and quality) and product characteristics (intrinsic properties of food) - operating at the "mediation junction", an area where the state, producers, and consumers meet (Schot and de la Bruheze 2003; Oldenziel and de la Bruhéze 2009). However, different than other mediators that transfer knowledge and information, bridging gaps and translating needs, the date label has also worked on these needs (e.g., food freshness) of consumers. Here is where food chains meet food ways.

Much has been written about how the date label has led consumers to ignore their senses in favour of a label (Tsiros and Heilman 2005; Abeliotis, Lasadiri, and Chroni 2014; Aschemann-Witzel et al. 2015; Stilling Bilchfeldt, Mikkelsen, and Gram 2015; Yngfalk 2016a; Lind Melbye, Onozaka, and Hansen 2018; Wilson, Miao, and Weis 2018; Mattila et al. 2018; Yngfalk 2016b). To develop these ideas further and to combine this food ways approach with the *follow the thing* method I engaged concepts from the emerging field (in STS and other disciplines) of *Valuation Studies* (e.g.,Kjellberg and Mallard 2013).

Value or values are not given or fixed; they are negotiated, contested, maintained, or constructed. The date label located at the tipping point between edible and inedible and therefore value and waste has become a powerful tool for the evaluation and qualification of food. It became this powerful because the misinterpreted - merging safety and quality - prescriptive characteristics of the government technology date label became combined with consumerist ideas about freshness and value. The date label not only prescribes what a product is worth (e.g., down-pricing of nearly out of date products or giving them to food banks) it also standardizes (ideas about) the freshness of food. Here the concepts of top-down government technology, which translates political issues into standardized prescriptions, and an internalized consumer valuation tool meet in a unique way within one label.

By combining a historical with a multi-methods approach I found that the date label is simultaneously a government technology, steering the production and consumption into a preferred direction, and a tool for valuation (inscripted onto the food item) that people use

to evaluate the freshness and quality of the product in front of them. The date label bridged not only the gap between field and fork but also between abstract government ideas and an every-day consumer need for food safety and quality.

However, edibility and palatability are not fixed concepts; they are relational (Paxson 2016: 271) and subject to change. Above I described how the need for freshness is not a given (e.g.Soper 2006; Graber 2007; Freidberg 2009; van Lente 2010). Rather, it is created and maintained in an interplay of food industry and consumerism. In our modern foodscapes, products must not only be safe but also fulfil a growing need for freshness and novelty. Here the ephemerality of food meets the ephemerality of the consumer experience. The date label has successfully standardized the ephemerality of food lifetime into predictable shelf-life time but simultaneously reduced our understanding of the value of the item in front of us to a *before* or *after* the expiration date. Being simultaneously good and bad, negotiable and rigid, government technology and valuation tool, the date label combines two competing issues: food safety versus environmental sustainability.

In Paper Three I described how this dilemma might be identified as a *wicked problem* to which a solution is hard or even impossible to find as in a pluralistic society social problems cannot meaningfully be correct or false, good or bad (Rittel and Webber 1973). When the date label was constructed in the era of social democratic regimes when rationality and planning were important values and administrative tools, its makers believed in the make-ability of society (see Paper One). However, with the change to a neo-liberal political and economic system, these ideas lost ground. In a pluralistic society what is optimal or at least desirable for a society is hard to define, let alone achieve. Others before me have identified food waste as a wicked problem that is unstructured, cross-cutting, and relentless (Närvänen et al. 2020). Causes and effects are difficult to identify, many stakeholders are involved, and the problem cannot be solved once and for all (ibid: 2-5). Actors within the food chain must often balance between different societal values (e.g.Evans 2012; Whitelaw 2014; Aschemann-Witzel et al. 2015). Originally the date label was constructed to make these decisions about value and waste easier. However, the confusion about the two scripts of the date label (“use by” and “best before”) - one a rigid safety warranty, the other a fluid quality recommendation - and the trust in this recommendation brought about the *wicked problem* of food waste.

Here is where food waste studies and STS concepts meet and here is also where you can find the date label - at the cross-roads between human and non-human, food chain and food ways, food policy and environmental concerns. In this thesis various concepts from STS and related fields are exemplified by *the little date on the package* thereby adding to the development of the concepts themselves. I used these STS concepts to add to the four areas of possible contribution identified at the beginning of this thesis. By using a historical and multi-method approach, I drew the biography of the expiration date, identifying the patterns and characteristics that make up the date label. This approach bridges not only the gap between field and fork, it also combines different theoretical concepts within its realm. The date label is simultaneously a *government technology*, using its literal *script* to prescribe a certain use, and a (e)*valuation tool*, leading consumers' judgement towards a misunderstood and merged prescription. It is a *double black box*, born from the necessity to make information about industrial food more accessible and decision-making about value and waste easier, reducing it to a glance on the package's date. The seed for its consequence (food waste), though unintended, was planted at its construction, by the script that was put in place. However, in order for these seeds to thrive and to lead to ways to meet the environmental challenge we face today, numerous decisions had to be made by many different actors. The biography of the *little date on the package* unravels and relates these decisions that brought us to where we are today.

7. Conclusion

Before presenting the three papers, some concluding remarks about the date label and ways to study *the little date on the package*.

7.1. Follow the thing/tool/technology

As said before, besides being concerned and troubled by the amount of unnecessary food waste, one idea was leading me to engage in this project and to look closer at the *little date on the package.* Inspired by the *Social Life of Things* I came to think about how *delicious* food turns into *disgusting* waste – what happens, how does it happen and why – and what role the expiration date has in these processes, practices and decisions. I became intrigued by the idea to follow a thing, a tool, a technology and to unravel its biography. From this theory about things, I derived a methodological tool. Not a method in the strict sense, but rather a methodological guideline, an inspiration of how to do research using a biographical method – not for humans but for a seemingly mundane technology.

This biographical method I then used in two ways. First, I applied it to the expiration date itself, looking at (parts of) its biography from its legal construction, to its daily practice along the food chain to its recent re-scription to meet environmental challenges. Second, by following a food product (milk) I identified the expiration date as one of the main determinants of the biographies of industrial food products as it defines their value and price throughout the food chain. The expiration date is the red thread that links together the whole chain.

Taking a technology and making it the centre of a study not only offers a constant inflow of data, information and theories but it also becomes a useful starting point of investigating the different actors, factors, ideas and practices that are connected to and through it.

7.2. "Multi-approach"

The expiration date is the read thread that brings together different actors, actions, practices, ideas, technologies, regulations etc. It keeps the food chain together and connects the material food product, different technologies, producers, transporters, retailers, consumers and the government. The epistemic value of the expiration date is that it allows us to showcase and understand ideas, strategies, actions and practices along the whole food

chain. Taking it as a starting point and following its trail offers insights into the wider world of politics and policy making, economics and market forces, technological change and environmental concerns but also (consumer) behaviour and perceptions. It does not only tell us about food chains but also foodways, as it does something not only to the food itself (standardizing its life time) but also to those who handle it (produce, transport, sell, buy, consumer and discard it) – standardizing and marketizing their senses and perceptions so to speak.

Using this approach, which takes a tool and looks at it from different methodological and theoretical angles, allows one to cross traditional disciplinary boarders and to connect different approaches and theoretical resources. Fanning out from one tool makes it possible to align different actors and to connect the material with the ideal, and government with technology. Each domain the date label invited me to investigate, demanded different approaches, both theoretical and methodological.

7.3 One date, different roles

Using this multi-approach, I could not only shed light on *why* we have a date label but also *how* it came about and *what* it did and does to the food chain and to our everyday life as consumers of food. Since its humble beginnings as an idea for a useful tool for consumer information until its role as a villain in the fight for sustainable food production the *little date on the package* did not change much in its essentials but changed the way we handle and think about food in substantial ways.

Brought about by a growing awareness of consumers' need and right to information about food safety and quality it was written into law in order to standardize unruly food lifetime into calculable, predictable, effective shelf-life time. Like this it was a bridge in the growing gap between field and fork and ensured a smooth functioning of an ever faster, higher industrialized and more global food market.

After initial resistance from the industry and lack of interest among consumers the date label became not only accepted but deeply embedded in the minds of all actors along the food chain. It came to not only determine how food is valued and evaluated but it also changed our needs and ideas about freshness and quality of food - until today our senses often gave way to the standard. Combined with the "industrial" logic of discarding things before they are used up the expiration date became co-responsible for vast amounts of

avoidable and unsustainable food waste. Today we face two competing issues: food quality/safety vs environmental sustainability. The date label has moved from being exclusively connected to food policy into the domain of environmental and sustainability politics.

Throughout its history the expiration date took on many different roles simultaneously: a safety belt for food, an information tool, a bridge between field and fork, a knowledge fix, a government technology, a necessary market standard, a value-meter, a warranty but also determinant of quality and freshness, a pricing factor, a bio-political force, a replacement for the senses and a cause for waste. All these different roles make up the expiration date which is a true example of our modern times.

7.4 Modern times

Like planned obsolescence, the need for freshness, quick fixes, constant renewal, or time-is-money, the expiration date is part of the *Zeitgeist* and touches upon the notion of time in a contemporary context. In our modern, industrialized food production and consumption systems that are constantly pressed for time (time is money) the expiration date has become a multi-facetted time-management system – it manages the life time of food, it dictates the time during which food can travel along the chain and it tells us when it is time to throw away food – it has become part of the Anthropocene where humans determine the course of nature for better and worse.

In the modern food scape products have to fulfil consumer needs (and market strategy) for freshness and novelty. Here the ephemerality of food meets the ephemerality of the consumer experience; and while the expiration date helps to change the first towards the better, it also assists in changing the second to the worse. The expiration date has successfully "fixed" the problem of the ephemerality of food but for the price of shortening the lifetime of food in general and reducing our senses to a short glimpse onto the date label in order to determine if the product inside is food or waste. Like so many things we study, the expiration date is simultaneously good and bad, a benefit and a curse, pulling in both directions evenly. And as such, the *little date on the package* is a worthy representative of the times we live in.

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9.The three papers

In this section you find the three papers that together form the core of the thesis. Each of them is single authored and focuses on a different angle or characteristic of the date label. The style/format, referencing (MLA/APA), notes (footnotes or endnotes) and language (English United Kingdom or USA) are according to the requirements of the book/journal they were submitted to.

9.1. The (hi)story of "the little date on the package"[45] – constructing and implementing the date label in Norway[46]

"Norwegian consumers have date fear" is a quote not only to be found in Norwegian newspapers[47] but also mentioned regularly by those working in the food industry. This date fear has serious consequences. According to reports 385 000 tons of food were wasted in Norway in 2017, food worth 21,9 billion kroners (Elstad Stensgård et al. 2018). 58 % of this came from private households – on average every person throws away 42,6 kilos of edible food per year, approximately eight shopping bags (ibid). Often these products might be past their expiration date (best before) but could still be eaten. Much research has be done on why consumers rely on the date label more than on their own senses (Tsiros and Heilman 2005; Abeliotis, Lasadiri, and Chroni 2014; Aschemann-Witzel et al. 2015; Stilling Bilchfeldt, Mikkelsen, and Gram 2015; Yngfalk 2016a; Lind Melbye, Onozaka, and Hansen 2018; Wilson, Miao, and Weis 2018; Mattila et al. 2018; Yngfalk 2016b). However, many of these studies take the date label as given, rather than looking at how it has been constructed historically.

Today the *little date on the package* is everywhere. When we do grocery shopping or go through our food storage, we are confronted with the expiration date. This date enables us to shop, and later eat, without making decisions within a wide array of topics – from hygiene and safety to legal and moral questions on value and waste. Rather, these decisions have been delegated from the senses to a standardized technology. Date labelling has not

[45] Borrowing from Ritzer's «Little House on the Hillside" (Ritzer 2000)
[46] I did all the translations from Norwegian into English myself.
[47] https://www.adressa.no/nyheter/okonomi/2018/04/18/N%C3%A5-blir-det-mulig-%C3%A5-kj%C3%B8pe-mat-som-er-g%C3%A5tt-ut-p%C3%A5-dato-16504214.ece?cx_Deling=AddThis

only made everyday life more effective; it also influences how food is designed, produced, sold, consumed and thrown away. The date label does not only influence our foodways, the ways we think about food (edible or waste), but also determines many practices along the food chain (production, retail and consumption). In its 45 years of existence the expiration date has become a powerful intermediary between "field and fork" (Sassatelli and Scott 2001; Poulain 2017 (2002); Kjaernes, Harvey, and Warde 2007; Eden, Bear, and Walker 2008; Zachmann and Østby 2011), transmitting information about food quality and food safety from the producer to the consumer by converting natural life time of food into standardized shelf life time. Why and how has this happened?

In this chapter I look back at the origins of the date label and ask why and how was the date label constructed and implemented? "Meanings are not imprinted into things by nature; they are developed and imposed by human beings" (Wolf 1982: 388). Changes or innovation in technologies don't develop by themselves, they are the result of active efforts by different actors – who were these actors and what were their goals? Miller and Rose (2008) argue that government is not only based on big schemes, but also on mundane, everyday tools and technologies, like labels or standards. Therefore, if we look at politics as a collection of different *government technologies* that translate political thoughts into everyday life, we can identify "how ordinary objects and technologies are made to speak for politics" (Woolgar and Neyland 2013: 3). Politics are not only social, cultural or economic, they are also material and technological. At the same time political, social, cultural and economic aspects enter into the construction of (government) technologies. The need for date labelling arose due to changes in the food chains and foodways in Norway. The politicians driving the construction of the *little date on the package* had certain ideas and goals, which were translated into the *government technology* date label. However, this process of constructing and implementing the date label as an intermediary between field and fork, of standardizing natural lifetime into shelf-life time and of inscribing dates onto food products to inform and educate consumers was neither fast, straightforward nor undisputed as this chapter will show.

The legal basis

"…we need a more powerful and more localized legal administration ... during these prevalent major epidemics; every time the Cholera has haunted the kingdom, there are only provisional arrangements on measures against this disease" (Ot.prp. nr 34/1860 s.2).[48]

"... the industry, and in particular the chemical industry, after the rapid development it has undergone recently, has largely taken over the preparation of multi-ingredient products and the preservation of single-ingredient foodstuffs. Moreover, during the growing competition falsification of food has grown" (Ot.prp.nr 51/1932 s.1).[49]

The *Regulation of the Labelling of Consumer Goods* (*Forskrift om merking av forbruksvarer)* from 1975, which regulated general date labelling for the whole country for the first time, was based on the *Law on Labelling Consumer Goods* (*Lov om merking av forbruksvarer)* of May 24, 1968. There were legal predecessors upon which the law and the regulation were built. During the late 1800s there was a growing body of knowledge about the connection between microbes and (food borne) diseases. Urban food/water hygiene and safety became a government concern that had to be resolved as to raise the overall sanity of the population (Latour 1988 ; Elvbakken and Rykkja 2006; Atkins 2011). In Norway this was done in the *Health Law* (*Sundhetsloven*) of 1860, which established local Health Committees (Sundhetscommissioner) that should engage in "preventive health work" in order to supervise "hygiene, quality of drinking water, sale of harmful food stuff…in order that no industry poses a greater risk for the general health than that which necessarily comes from their usual business" (*Sundhetsloven* § 3).

This law was an "important foundation for the medical and health laws in Norway up until today" (Mortensen 1992:10). There is no direct reference to an expiration date of food in the law, but it is obvious from the text that there was an understanding that the government had to protect people from food related disease. Epidemics (food borne and otherwise) had been identified as a danger to public health and the sanity of the nation. Microbes were identified as the main culprit and the issue became rationalized in the

[48] (Mortensen 1992: 10)
[49] (Mortensen 1992: 17)

language of hygiene and prevention and addressed by a new law that would implement this new rationale in every municipality in Norway.

Once the hygienic conditions in the cities improved and the imminent danger of epidemics faded, the government broadened the scope of its interventions. Politicians started to be concerned with food quality and honest market practices. In the years between the two wars there was a great trust in science and the idea of a make-ability of society: "social renovation" and "social engineering" were the political ideologies of the 1930s. The ideology of the time was "technocratic optimism" (Myrvang, Myklebust, and Brenna 2004): modernistic, against tradition and with an enthusiasm for technical innovation and the idea that science and technology could solve most of humanities' problems – society could be built for the common good for all[50]. The hygienists and scientists of the 19th century were joined by economic experts and technocrats who bureaucratized (consumer) society and "streamline marked institutions in such a way that the connection between production and consumption would be free of friction" (Myrvang 2009: 13). For the food sector these ideas manifested in the *Law about Food Control* (*Lov om tilsyn med næringsmidler o.a. (Næringsmiddelloven)* of May 1933[51]. The main concerns of the law were "moral and economic" as stated in §1: "aiming at other matters of a moral and economic nature to prevent misconduct and dishonest trade in food and drink". Until the mid-19th century the general rule had been *caveat emptor* (buyer beware) but afterwards the responsibility for quality and safety of food shifted from the consumer to the producer (Atkins 2016 (2010)). With this shift came a new need for a legal regulation of the abovenamed moral and economic concerns within the food chain.

The 1933 law was not changed in essentials until 1983 and was the basis for many regulations concerning food. Important for the development of the expiration date is the *General Regulations for the Production and Retail of Food Products* (*Alminnelige forskrifter om tilvirkning og omsetning av næringsmidler)* from May 3, 1935. This regulation was implemented to prevent health damage from food products and ensure hygienic conditions for retail and production of food (ibid: 40). The regulation included instructions about preservatives, location and equipment and also labelling and hygiene in order to specify

[50] For general information on Norwegian history see Aschehougs Norges Historie, 1998; Grunnbok i Norges Historie, 2013 and Edvard Bull, Norges Historien etter 1945, 1990 [1982].
[51] Implemented July 1935.

another directive of the law: "to prevent wrong ideas about the product's origin, characteristics, sort, quantity, composition, or other things that are important for people's health" (*General Regulation,* article 2). Subsequently there were regulations about date labelling, but these were not yet general or comprehensive and were concerned exclusively with the 'use by' date of highly perishable food. Quality, altered by a product's age, was not yet a legal concern. Here the Norwegian legal path differs from, for example, the British one, where laws about food quality predated laws about food security (Milne 2013). Before date labelling connected to food quality became a need for consumers and thereby a political issue, a change in the Norwegian foodways, food chains and consumer awareness was necessary.

Changes within Norwegian foodways and food chains

> *"In the fifties you got the bread over the counter and butter just simply packed and milk tapped into a bottle on the spot. There was no need for date labelling then".* [52]
>
> *"The industry is taking over more and more of the work in the kitchen. We find not only frozen fish and cheese and butter in the freezer - we can find pre-packaged all the ingredients for a finished dinner: the meat cakes, vegetables, fruit compote, and even pre-cooked potatoes in a box. We hesitate in front of each new and unknown item, and many may long to return to the old-fashioned grocery store, where we could confer daily with the owner about the price of the cheese and the taste of the sausage. […] However, we are aware that the quality of these pre-packaged foods is very often dependent on the length of time since the packing, because they are not always canned or sterilized".*[53]

These quotes illustrate how the foodscape of Norway changed drastically from WWII onward. In order to reconciliate the nation after 1945 all parties went to the polls with a so-called *joint programme*. This gave the state overall responsibility for the social and economic development of the country. In cooperation with private industry and business, the state would pave the way to industrialization, economic growth, rising living standards,

[52] Interview Mattilsynet, July 2016.
[53] Forbrukerrapporten February 1967: *Datomerking er påbudt for en rekke sorter matvarer.*

redistribution of wealth, reduction of unemployment and social stability. This approach was embedded in ideas about the make-ability of society, the role of the state in enhancing the welfare and living standard of its citizen (common good) and the possibility of streamlining the market to avoid friction between production and consumption (Stenersen and Libæk 2003). After the war there was an acute shortage of food and many products were rationed. This was not only a post-war-time necessity but also a way to reduce private consumption and support the import of goods for public well-being and the industrialization and modernization of the country, importing ships and machines rather than bananas and cars (ibid: 134).

These rationings were lifted between 1949 and 1952: "The end of the war did not end the food shortage immediately. […] Coffee and sugar were rationed until 1952, but then then this was over for good" (Notaker 1993: 296). This, together with the abandonment of many import restrictions and custom regulations in the 30s and 40s, led to a change in available foods (Notaker, 1993; Myrvang et al 2004). New and exciting, but unknown, products entered the Norwegian market and fruits and vegetables became available outside the short Norwegian season (Lange 1998: 163). "The market opened and many products came that Norwegians did not know, […], there had to come a way to assist consumers but also to support producers" [54]. People who before had been used to local, seasonal products were now confronted with foods they had difficulties identifying and treating.

Norway also became part of international (trade) organisations like the OEEC (OECD since 1960) and EFTA in 1960. The markets were liberalised, and many regulations curtailing free trade were lifted. One of these was the regulation that businesses were not allowed to operate different branches. This led to a growing success of supermarkets that replaced small shops. In 1945, almost all food sales were done "over the counter" and in 1952 there were just a mere 129 self-service stores in Norway – but the numbers increased steadily until in 1975 90% of all food shopping was done in supermarkets (Bull 1990 [1982]: 228). "The supermarket revolution with parallels everywhere in the Western world radically changed the reality for both food producers but also consumers" (Olsen 2010: 8).

[54] Interview, Matvett AS, July 2016. This quote stands for many similar ones gathered during several interviews on the topic.

Consumers could not get advice from trusted shopkeepers anymore but had to find their own way along impersonal supermarket aisles.[55]

Where before the local grocer had sold local products that were known and visible on the counter the ongoing industrialization of food production further alienated consumers from the products they were consuming. Norwegian food production became a central object of both modernization but also regulation. The Labour government of the post-WW2 WWII years regulated the industry via a "national managing system" and programs for state-led modernisation of agriculture, industry, market and welfare for all (Bull, 1990; Lange 1998; Olsen 2010; Finstad previous chapter). Norwegian consumers were increasingly confronted with not only new and unknown products coming from far-away places but known products, like fish, vegetables or milk, had also changed due to new packaging, processing and preserving technologies. Due to this "industrialization, standardization and globalisation" of food, the products themselves had become "distanced" and "invisible" (Finstad 2013). One example for this is freezing: While private freezers were a novelty in the 1950s, by 1967 37% of Norwegian owned one and this number increased to over 70% in the 1970s (ibid: 37).

On the one hand these new preservation technologies made life for housewives much easier but they also diminished their ability to judge the quality and freshness of products both when buying in the supermarket and later when using them at home. In a changing foodscape the distance between "field and fork" had become vast; not only geographically but also in many other aspects (imported, processed, preserved and packaged products sold impersonally in supermarkets) for consumers to make proper judgments about the safety and quality of food. Expertise took precedence over experience, sanctioned measurements over personal knowledge, and objective numbers over subjective opinion and personal interaction (Porter 1995).

Food is a perishable matter and loses its quality and edibility over time. In order to evaluate packaged food, which one could not smell or even see before buying, consumers needed a standardized shelf life telling them how long food was safe and good to eat. At the same time when food became hidden, the need for *quality for money* became more

[55] Forbrukerrapporten July 1971: *Dagligvarehandelen og forbrukerne*.

pressing as consumers found a new, institutionalized self-consciousness that led to the implementation of new labelling laws and regulations.

Housewives, consumer(organisations) and politicians

> *Who are the consumers? Because consumers are so many – much and many! And the normal consumer had to eat what they could buy. There was nothing big, you could not see a strong need for date labels. There were no marches or something like this.*[56]
>
> *We who are housewives and who work among housewives know which centenarians they must be to get the money to stretch. Therefore, the housewives must above all be assured to receive quality for the money they spend, whether for food or clothing. […] We hope that this important issue will get the necessary acknowledgement, from our authorities, from our producers and from our consumers.*[57]

Not only were there great changes in the production and sale of food after WWII, the role of consumption and consumers had also changed. The time around 1960 is a "watershed" in consumer history (Myrvang, 2009: 22) with continuously growing consumer rights. In 1962 US president John F. Kennedy presented the *Consumer Bill of Rights,* which contained four basic consumer claims that should be met by industry and government not only in the United States: the right to safety, the right to be informed, the right to choose and the right to be heard. The first three touch directly on the expiration date, which was implemented to ensure that consumers could make informed choices and that the food they purchased was safe to eat.

At the same time in Norway, even though still a rather poor country at the time, private consumption almost tripled in 1950 and 1960 while expenses for basic goods like food declined steadily: from two thirds of the household budget in 1947, to 35-40% in the 60s to a little over 10% today (Lange 1998; Eriksen 2012). Women, the housewives that the tabloid newspaper Verdens Gang (VG) mentioned, became the driving force behind the newly developing consumer culture: "Women with heart and brain for housekeeping were important actors in articulating new needs and implementing new habits in the home in general, and in kitchens in particular" (Myrvang. 2009: 155).

[56] Interview Mattilsynet, October 2017
[57] Article in Verdens Gang (VG) – one of Norway's largest tabloids newspapers, 1951

From the 1950s onwards, consumers got a stronger voice, institutionalized in the establishment of the *Ministry of Family and Consumer Affairs* (*Departement for Familie og forbrukssaker*) (1956[58]) and the establishment of the *Consumer Agency* (*Forbrukerrådet*) in 1953[59]. The general goal of the Consumer Agency was not only representation of consumer interests and counselling of state authorities, but also a continuous work on research, dissemination of consumer information and the enhancement of product standards and labels. In order to do a *Committee for Product Declarations and Quality Labeling (Commodity Committee) (Hovedkomiteen for varedeklarasjoner og kvalitetsmerking (Varefaktakomiteen)* was established at the same time. The beginning was not easy for Norwegian consumers (organisations). The Ministry and the Agency were mocked for being "housewife-organizations"[60], and the popular newspaper VG called it "the most useless of all ministries"[61] and continuing regulations of prices and private competition (which were slowly being lifted, see above) kept choice and quality of products low (Forbrukerrapporten, October 1958) as this quote shows:

> [...] I've talked to an older inspector in the Food Safety Authority, and she said that, in the old days, it was a problem, for example meat, they sold "sour" products, products that should not have been sold [...]. So that as a consumer protection, it [date labelling] is a very good measure […] so as a consumer you don't have to pay a lot of money for a product that is bad, right. [62]

In order to support and educate consumers the Consumer Agency started publishing its own magazine in 1958, which was well read in Norwegian households (145 000 subscriptions in 1965). Under headlines like "Skilful consumers – a path to a higher standard of living" (May 1958), "Think before you buy" (December 1958) or "Cost-conscious consumers - a necessary link in price competition" (October 1958) consumers were advised to spend their money consciously and cautiously and to be aware of their rights: "It is the consumer's task to direct and lead the production by their own demand. […] Every crown we deliver over the

[58] http://www.nsd.uib.no/polsys/data/forvaltning/enhet/15000
[59] https://www.forbrukerradet.no/
[60] Interview Mattilsynet, October 2017
[61] VG, 5th January 1965
[62] Interview Mattilsynet, July 2016

counter should be a vote for what we want produced - and thus we should also be able to influence our prices" (October 1958). There was a general change in attitude towards product quality and a growing awareness of consumer rights. Housewives had turned into consumers and there were ministries and organizations protecting their interests and addressing what had been identified as a growing problem. Even though consumers were not "marching" for their right to be informed about the age and quality of foodstuffs, politicians identified an issue that had to be addressed as this input during a parliamentary discussion by Guri Johannessen, a politician from the Labour Party (Arbeidspartiet) and head of the Social Committee (sosialkomiteen) that prepared the 1968 Law about Labelling of Consumer Goods shows: " […] consumers have a right to get basic information about products, and that there is a need for regulations that primarily focus on consumers' interests. "[63]

As I will show in the next section, it was not the Labour government that had fought for the law since the 1950s that passed it. A conservative coalition government[64] formulated the law that is the basis for the expiration date as we know it today. The final law was very different from what was originally anticipated. It was still a long way until consumers got the necessary intermediary between field and fork and received more information about the quality of the food products they were about to eat.

The legal path to the date label

> *Consumers are basically amateurs when it comes to judging qualities, and they have the right to protection and guidance to ensure that competition between producers and retailers results in a fair price / quality relationship and that there is no abuse of consumer ignorance.*[65]

This OEEC paper describes very well the situation in which consumers found themselves in the 1950s and 60s. In the economic marketplace, information is key to consumer's choices

[63] Input by Guri Johannessen during the 112. Ordentlige Stortingsforhandlingen i Odelstinget, 3rd of May 1968.
[64] Per Bortens government of Centre Party (Senterpartiet (Sp), Right (Høyre (H), Left (Venstre (V) and Christian People's Party (Kristelig Folkeparti (KrF); 12th October 1965 – 17th March 1971
[65] «Productivity in the Distributive Trade in Europe. Wholesale and Retail Aspects" (published by OEEC, Paris 1954)

and safety. “Labelling is one mechanism for promoting policy goals and/or addressing specific consumer interests and concerns” (Einsiedel 2002: 210). Labels provide not only the necessary information to make choices, but they can also enhance consumer confidence while their ability to be standardized ensures a smooth working of the market (ibid: 216). The date label acts as a *knowledge intermediary*, a *broker* that informs the consumer about the quality of unknown or hidden products. The process in which the expiration date became implemented to solve the problem of a growing concern with food safety and quality, a growing distance between “field and fork” and a rising international demand for market standards and labels took time, (international) pressure, compromise and many exemptions until this goal was reached. The main actors were the (conservative) government and the food industry on the one hand and the Labour Party opposition and the Consumer Agency on the other. The main discourse was one of protection on both sides: Norwegian business and industry on one side, consumers on the other.

Besides the changes in the Norwegian foodscape and attitudes of and towards consumers described above, there were other driving forces behind the establishment of the 1968 Law about Labelling of Consumer Goods and the 1975 Regulation of Consumer Goods. One of these was the Codex Alimentarius, established in 1963:

> International food standards, guidelines and codes of practice contribute to the safety, quality and fairness of this international food trade. Consumers can trust the safety and quality of the food products they buy, and importers can trust that the food they ordered will be in accordance with their specifications. [66]

The Codex Commission(s) develop(s) international food standards (that have to be approved by the member states individually before they become national law) in order to a) protect consumers against health risks and b) to harmonize standards in order to facilitate international trade[67]. With an ever-growing international integration of the Norwegian (food) market (Codex, EFTA, OECD) the government was not only facing a growing necessity

[66] http://www.fao.org/fao-who-codexalimentarius/about-codex/en/ – 25th September 2017

[67] The Norwegian parliament unanimously accepted being part of the Codex Alimentarius agreements and standards on 6th May 1975 and Norway is host country for the commission that works with fish and fish products. Only six weeks later the Norwegian parliament put the regulation for food labelling into place. [67] I will come to this regulation a bit later in the article.

for food regulations from consumer organizations inside Norway but also demand from international import and export.

As described above, laws concerning food safety have already been in place for a long time in Norway and concerns about food quality had reached (some) legal status as well. Some of the earliest legal mentioning of the expiration date came with regulations for milk[68], fish[69]and several other perishable goods.[70] One of the problems of these regulations was that they were given by different ministries concerning different food products (like fish or milk) and using different methods (information by code or by date). There was no uniform or general law enforcing standardized labelling for all food products. However, in the late 50s[71] started working on a Recommendation for Quality Control and Regulations for Consumer Goods (*Innstilling*[72] *om kvalitetskontroll og bestemmelser for forbruksvarer)*. The Commission was led by Ragnar Christiansen (Labour Party, in power at the time) and consisted of members from the Ministries of Social Affairs, Industry, Fishery, Agriculture, Family and Consumer Affairs and the Consumer Agency. In February 1963, after reviewing existing quality and labelling laws and comparing the Norwegian case with other countries, the majority of the Commission reached the conclusion that there was the need for a general law for quality (control) and labelling "to assist consumers in their choice of products and to guarantee that products have the characteristics they claim they have " (p. 63). This law would also simplify the complex existing laws and create clearer legal and administrative lines (p. 64).

The law was supposed to include labelling, advertisements, liability and service regulations and to be the basis for forthcoming regulations about labelling, quality, production, packaging and transport technologies etc. The recommendation was sent to the Ministry of Family and Consumer Affairs in order to be made into law. However, while the ministry was

[68] Regulation for milk and cream - Forskrifter om melk og fløte, §26, 17th of July 1953

[69] General regulations for the quality control of canned fish - Generelle forskrifter for kvalitetskontroll av hermetiske fiskevarer, § 9, 14th of May 1968

[70] Regulation about date labelling of highly perishable goods - Forskrift om datomerking av lett bedervelige matvarer, nr. 23/66 from 1966

[71] In the case of a comprehensive law, a committee consisting of professionals with special competence is often set up. The committee is tasked with making a recommendation to the Ministry. See website from Stortinget: https://www.stortinget.no/no/Stortinget-og-demokratiet/Arbeidet/Lovarbeidet/

[72] When a committee has completed its work on a case, the committee makes a recommendation. The recommendation is then dealt with in Parliament. Through the recommendation, the parties mark their political positions and promote proposals for decisions. https://www.stortinget.no/no/Stortinget-og-demokratiet/Arbeidet/Om-publikasjonene/innstillinger/

considering the proposal there was a change in government from Labour to Conservative (Lange, 1998) and the Ministry did not agree with the proposed law but rather followed the concerns of the minority. This was due to fears by the industry and the Ministry of Industry that Norwegian production would be discriminated against by a one-sided law.

Based on the recommendation from 1963 but with the concern from the industry in mind the Ministry drafted a Parliamentary Proposition (Ot.prp. nr 61, 1966-67), which was presented to the Odelstinget[73] by minister Elsa Skjerven (Christian People's Party) on the 7th of April 1967. In this document the Ministry of Family and Consumer Affairs argued "that there seems to be no particular need to introduce a general obligation to labelling." The Ministry emphasized that consumers had justified claims for access to basic information about any consumer goods, but concerns of the industry about constraints to the free flow of international goods due to a one-sided Norwegian law brought the Ministry to the conclusion "that it is left to the King at any time to decide which goods will be labelled" (p. 13). A proxy act[74] was proposed, which included the possibility of more far-reaching regulations in the future.

By now, the proposed law had changed from a proposed quality law including quality standards, marketing and advertising, warranty and service to a pure labelling law with rather limited obligatory information – everything else had to be standardized in separate regulations. This law would be a supplement and alternative to the voluntary product declarations issued by the Varefakta-Komiteen[75]. A social committee transformed the proposition into *Innstilling O. VII.* The majority of the committee agreed with the proposed legal text and it was presented first to the 112th parliamentary debate in the Odelstinget on May 3 1968 and then to the 112th parliamentary debate in the Lagtinget on the May 10

[73] Laws had first to be agreed on in the Odelstinget and later in the Lagtinget. This division of parliament in two different "chambers" was abolished in 2009. https://snl.no/proposisjon

[74] Fullmaktslov = Proxy Act, common term of law where the legislative power, the Storting, gives other bodies authority to make further provisions. https://snl.no/fullmaktslov

[75] Varefaktakomiteen = commodity committee established by the Consumer Council on 30.06.1954 as a cooperative body for consumers, producers, dealers, researchers, standardization organizations and some public institutions. Their task was to work for increased use of informative product declarations (first in 1955 for fresh fish pudding) and for quality labelling (voluntarily) but "product declarations do not save the consumers to choose for themselves. Product declarations help to make the right choices" (Master's thesis by Anders Persson: Easier to be a consumer? Oslo, 2007).
Worked from 1970 as an advisory committee for the Consumer and Administration Ministry in matters concerning the law on labelling of consumer goods.
http://www.nsd.uib.no/polsys/data/forvaltning/enhet/15301/endringshistorie - 25th September 2017.

1968. During the debates in parliament on May 3, the proposition was met by questions and comments by 10 different people. The debate between members of the government and the opposition reflected the different positions about protection of either industry or consumers. And even though neither of the politicians could publicly deny consumers the right to information, questions were raised how far this right should go.

In both Odelstinget and Lagtinget the vote went in favour of the proposed law, which was then formally accepted and put into effect on the 24th of May 1968. Like in the 1933 law, the arguments of the industry weighted heavier than those of the consumers. The problematized need to protect the Norwegian industry and agriculture from too rigid, far-reaching or premature labelling standards superseded the initial issue of quality control[76] and far reaching consumer information. The rhetoric was still that of consumer protection and information, the political reality however and the practical outcome of the discussion where different from the initial intention. Still, for the first time Norway had a congruent law about the labelling of consumer goods and regulations concerning specific product(groups) would follow.

Seven years later, on July 25th 1975, the Ministry of Consumers and Administration issued the Regulation about the Labelling of Consumer Goods, which did not only regulate the date labelling of highly perishable food (which had existed before) but also established the *best før* (best before) label, which produced a legal framework for the right to *quality for money*. Article 8, durability (or shelf life), stated: “the label must include the text "Best before" and an indication of day, month and year. If a product lasts longer than 12 weeks, the day can be left out.”

In this section, we saw how the consumers’ needs for information about food safety and quality was institutionalized in the expiration date, which standardized shelf life so that food would be predictable and fit into the industrialized food system. The *little date on the package* was put in place and inscribed diverse social, political, economic and technological factors in one comprehensive government technology (Miller and Rose, 2008), prescribing a certain way of handling and using food. The language was set by the state, the necessary information had to be filled in by producers with consequences for the whole food chain.

[76] See also findings from Elvbakken and Rykkja (2006) on tensions between the Ministry of Health and the Ministry of Agriculture and prioritizing of agriculture in the Norwegian food control law giving

The expiration date as an intermediary between producers and consumers enabled the latter to make informed judgements on invisible quality and safety characteristics. Or not? Even though the legal text suggests that now consumers would get the information they needed to make informed choices about the shelf life and quality of food products, reality was far from it. Due to the resistance of the food industry, it took more than 10 years for the full implementation of the expiration date.

The slow implementation of the expiration date

Even though the regulation was issued in July 1975, it did not come into effect until a year later. This long transitional period was a concession the Ministry had made towards the industry. The regulation was met with strong resistance from not only producers and retailers but even by parts of the state administration. A former member of the food authorities of Norway remembers: " There was a strong resistance. I had an old colleague, who had been in business very long and he thought Norway would go hungry due to the date label." [77]

Norway's specific geography and demographics led this official to fear that a strict administration of the expiration date might lead to food shortages in certain parts of the country. Norway is a large country with a sparse population (especially in the north) therefore getting products to the consumer on time was a challenge with the transportation methods of the 1970s:

> And it's almost anecdotal then, but then there were huge problems with the coffee here from Trøndelag. Because the ground coffee was packed here and it was before they had these packs they have today, so they packed it in the coffee bag and before it was distributed to the outermost north it was already past the expiration date.[78]

[77] Interview Mattilsynet, October 2017
[78] Interview Mattilsynet, July 2016

When the expiration date became legal, Norway had not yet been touched by the new-found wealth of the beginning oil age[79]. People, especially in the many remote areas of the country, were used to few and low-quality products.

> You must remember that up to the 1970s Norway was a rather poor country. […] People might not have had much to come by. And then in the shops out here, the potatoes were old and everything was old like that, […][80].

Consumers were not yet concerned with the freshness and quality of products in the same way as they are today – the need and demand for freshness was different. Furthermore, despite the Consumer Agency, consumers were less well organized than the food industry and therefore the voice of producers and retailers weighed heavier at the time. In the sixties and seventies, it was the wholesalers (grossister) who determined products and prices. In order to keep prices low, they ordered large quantities, which were difficult to distribute and sell before they expired. Therefore, both wholesalers and small retailers were frustrated with the expiration date as it disrupted their buying and selling routines; they worried about ending up with goods with a short shelf-life in combination with little turnover.[81]

Another obstacle to a unified and general date labelling were competing ministries who had issued labelling for their 'own' products before (see above). This led to overlapping and confusing legislation:

> The Ministry of Agriculture issued one law on quality of agricultural products and the Ministry of Fisheries another […]. And all of these laws were quite difficult because for example, say mustard and ketchup then. Mustard was a common commodity, but ketchup was a vegetable preservation, so they went under two different laws. But they were produced at the same factory. [82]

[79] The exploitation of the oil and gas reserves in the North Sea started in 1969 and the Norwegian Oil Company Statoil was founded in 1972 and even though locally wealth started rising fast due to jobs in the oil building industry it took some time until it spread thought the entire population of Norway (Bull, 1990 (1982)).
[80] Interview Mattilsynet, October 2017
[81] Forbrukerrapporten May 1963: *Hvorfor ikke datostempling?*
[82] Interview Mattilsynet, July 2016

The following products fell under the legislation either of the Ministry of Agriculture or the Ministry of Fishery and were therefore exempt from the 1975 regulation for product labelling: milk and cream; Norwegian vegetables, fruit, berries, and potatoes; vegetarian canned foods including, soft drinks; ice cream; honey; margarine; eggs; packaged fish.

The Ministry of Consumer Affairs and Administration also had to make concessions towards the industry regarding the implementation of the regulation. There was a long transition period to give the industry time to adapt and date labelling was introduced step by step.[83]

Not only was there a year between publication and coming into effect, there had also been a dispensation from date labelling for all products with a durability longer than 12 weeks until the first of April 1977 (Forbrukkerapporten, August 1976). There was also a long list of products that were generally exempt from date labelling: fresh vegetables, roots and tubers; fresh fruit and berries; cheese packaged at the last sale step; corn flour and potato flour; salt; sugar and caramel; cocoa and chocolate; candy and chewing gum; vinegar; natural mineral water, soda and alcoholic essences.

When looking at this list of exemptions and the time it took until the regulation would come into force, one can argue that this was an important initial step but still far from a general date labelling regulation. It took until the *General Regulation for Labelling of Pre-packaged Foods* (Generell forskrift for merking m.v. av ferdigpakkede næringsmidler, 25.09.1986, nr. 1917), issued by the Ministry of Social Affairs, for the expiration date to get a real hold in Norway. This regulation eliminated all former exemptions and excluded only packaged but fresh berries, fruit, vegetables, roots and tubers and packaged but fresh bread and pastry from the need for date labelling[84]. So finally, in the late 1980s, the expiration date had reached its full legal potential.

Conclusion – where are we today?

The story of the construction of the expiration date as a standardized intermediary between producers and consumers is part of the general strengthening of consumer rights over the last 150 years and an answer to the growing industrialization of food production and an

[83] Minister Annemarie Lorentzen during the hearing in parliament on 31st of March 1976

[84] Later in the Regulation about the Labelling of Food (Forskrift om merking mv av næringsmidler, nr. 1385 from 21st December 1993) more products were added to the list of exemptions again (like for example: wine and other alcoholic drinks, vinegar, cooking salt, sugar, chewing gum or ice cream in individual portions).

increasing distance between the "field and the fork". From infrequent, situational and local laws concerned with consumer protection and public health, consumers slowly entered the picture in the second part of the 19th century when responsibility for food safety started to shift from consumers to producers and vendors (Atkins, 2010) and when authorities issued general laws to ensure public health. In the wake of a state that believed in the power of science and technology and the make-ability of society some basic food laws were issued.
This trend towards consumer protection continued after WWII when rationing was lifted and food shortage turned into abundance. With growing wealth and buying capacity, consumers started to be concerned more about the quality than the quantity of food. Consumers' needs had changed. However, import of new and unknown goods and new packaging, processing and marketing technologies made it harder for consumers to judge the quality of food by themselves and made it necessary for intermediaries, both human and non-human, to inform consumers and to assist them in their choices. The sixties were a time in which consumer's rights and representation really took off. Both state and independent institutions were founded that took consumer's rights as their main concern. By doing both, educating consumers and speaking up for their needs, legal regulations followed.

Even though the 1968 Law for the Labelling of Consumer Goods was watered down significantly from its original emphasis on wide-reaching consumer information, consumers' need for information and labelling could not be ignored. However, due to particularities of Norwegian geography and demography and a strong resistance from the food industry and government and administration, it took the 1975 Regulation of the Labelling of Consumer Goods more than 10 years to successfully regulate date labelling all along the food chain and all across Norway. Here we can see how social, political and economic factors are involved in constructing this particular government technology. Furthermore, this case shows how mundane technologies like the *little date on the package* speak for underlying politics and interests. There is a connection between food culture, food politics and food technology that becomes visible in the history of the date label.

Date labelling made it possible for consumers to evaluate the freshness, safety and quality of food in a changing foodscape. In an industrialized food system, the date label serves as a mediator, bridging the distance between field and fork. Doing so the expiration

date has become one of the most stable government technologies and its script has stayed (almost) unchanged until today. However, the initial ideas and goals (informing consumers about the quality of food) inscribed into the date label and prescribed to its users were often read differently by consumers than originally anticipated. Many consumers came to trust the date label more than their own senses, which lead to substantial amounts of avoidable food waste (Tsiros and Heilman 2005; Abeliotis, Lasadiri, and Chroni 2014; Aschemann-Witzel et al. 2015; Stilling Bilchfeldt, Mikkelsen, and Gram 2015; Yngfalk 2016a; Lind Melbye, Onozaka, and Hansen 2018; Wilson, Miao, and Weis 2018; Mattila et al. 2018; Yngfalk 2016b). Today the expiration date and the infrastructure built around it might be or at least seems irreversible to many, while others challenge the very idea of it. There is flexibility in the date label and the connection between the label and food waste is neither natural nor unavoidable. If it was possible to convey the necessity and need for date labelling to consumers in the 1970s it must be possible to convey less dependency on it today. Today there are many efforts to reduce food waste caused by the (misunderstood) script of the date label and shelf life of food. In Norway we see a combined effort of industry and government to meet the UN Goals of a sustainable production and consumption of food. Initiatives from a Trade Agreement (bransjeavtale) between the government and mayor players of the food industry to reduce food waste in Norway by half in 2030, to a change in the script of the date label on several products ("best before but often good after"), to the establishment of food banks in the major cities of Norway (Oslo, Bergen, Trondheim etc.) address two moral issues around food waste (give to the poor and prevent waste of resources). However, all these initiatives work around the date label without challenging the essence of it. Time will tell if the *little date on the package* has an expiration date as well.

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9.2. Black boxing milk: Date labeling[85], quality, and waste throughout the Norwegian milk chain

Introduction

In pairs, the cartons swiftly move through the dairy, transported on a black conveyor belt. They are filled with fresh milk, have been closed and sealed, and now they are ready to pass to the printer. In a matter of seconds, the machine inscribes the expiration date, time of day and code for the particular dairy facility. In one apparently seamless movement, the milk changes from being an 'anonymous, timeless entity' to a 'packaged, traceable commodity' and the natural life of milk becomes standardized and transformed into black boxed shelf life. Coined by cybernetics in the mid-twentieth century, the term 'black box' refers to the simplification of complicated systems, mechanisms or objects, by focusing only on their inputs and outputs. Bruno Latour (1987) applied the terminology to the studies of science, arguing that once knowledge is established it is accepted as true, while the complex processes involved in its creation are forgotten or neglected. The concept of the black box can also be applied to standardization processes like food packaging or labelling where "[…] ideas of quality and safety are condensed through material and semiotic connections and exist as a kind of shorthand reference to assemblages of persons, places, and production" (Tracy 2013: 440). In this article I analyze how the date label not only black boxes the product inside, hiding away complex processes and assemblages that have gone into its creation, but by doing so, the date label furthermore becomes the most determining quality parameter in the milk's life, incorporating and concealing several other properties and qualities that characterized the product before. This has great effects on all actors and locations along the whole food chain (before and after printing the date) until at the end the consumer is left with the dilemma: senses or standards?

The date label and food waste

In recent years, the date label has been identified as being responsible for a substantial part of household waste (European Union Committee 2014; Norstat 2016; Elstad Stensgård et al. 2018). I argue that this connection is neither given nor inevitable and that in order to address this issue, one has to understand how the expiration date is actively constructed

[85] This paper was published in an American journal, hence the spelling with one "l"

and put into practice by different actors throughout the food chain. Many studies about date labelling and food waste have focused on the consumer (for exampleEvans 2012; Stilling Bilchfeldt, Mikkelsen, and Gram 2015; Aschemann-Witzel et al. 2015) , others have shed light on the political and legal construction of the date label (Milne 2013; Yngfalk 2016a) Less has been written about the effects of the date label at other locations of the food chain. Notable exceptions are (Whitelaw 2014) on Japanese corner shops or Yngfalk (2016) on Swedish supermarkets. In this article, I expand the focus and will follow the construction, practice and consequences of the date label of milk throughout the whole food chain, literally from the udder to the gutter.

By doing so I will 'de-naturalize' the current association between the date label and food waste. Using the Norwegian dairy industry as an example, I show that the date label by itself does not automatically lead to discarding food. At every location there is the possibility for waste due to the strictness of the date label, still there is enough flexibility inside the black box and within the human relations that there are ways to avoid it. By using an integrated approach and by looking at the processes and actors co-constructing the date label along the whole food chain this article adds to current debates about quality, value and waste in industrial food production.

Materiality, quality and black boxing

Food has a perishable and "biodegradable materiality" (Mattila et al. 2018: 2). The date label standardized these unruly properties of food. It has in a way standardized "freshness" (Freidberg 2009) and quality and made food products more manageable and less connected to individual bodies and their senses. But what does quality mean, and how is it determined and evaluated?

I take as a starting point the idea that quality is neither just a "subjective judgement" nor a "pure objective measure"; it is "produced within the relations of commodity consumption and production" (Mansfield 2003). Quality is not simply inherent in a product but constructed and then legitimized via standardization and certification mechanisms (Renard 2005). (Callon, Meadel, and Rabeharisoa 2002) propose an "economy of qualities" and describe how products pass through a series of "qualification processes" in which qualities are "attributed, stabilized, objectified and arranged". "Intrinsic properties" (in the case of milk: fat, protein, microbes, etc.) and "extrinsic attributes" (measurement,

evaluations and judgements) are combined to define the quality of a product. Building on these ideas, I argue that by printing a date label on a package, a whole set of other qualities, on which this date depends, are rendered invisible, and that from then onwards milk is evaluated mainly by its remaining shelf life with far reaching consequences for both our food chains and foodways. The product milk and its quality become black boxed and hidden from the consumer.

According to Bruno Latour (Latour 1987, 1999) black boxing renders the "internal complexity" of technologies "opaque and obscure" and the technical and scientific work gone into the black box invisible to users. In this article, I will show how the date label is a "double black box" working on different levels. The first level of black boxing is the setting of the date label in the laboratory. The second level is the above-described printing of the date label onto the milk carton. This carton then becomes a black box itself, hiding and protecting the natural product milk inside. It becomes a standardized entity with a standardized shelf-life.

Standards, a central feature of modern life, are very pervasive, as they are taken for granted in our everyday environment and completely embedded in everyday tools of use (Lampland and Star (Lampland and Leigh Star 2009: 11). The expiration date has become such an embedded, everyday tool of use: It enables consumers to shop, and later eat, without making decisions within a wide array of topics – from hygiene and safety to legal and moral questions on value and waste. One notable example of how standards work is Dunn's analysis of the connection of botulism and food canning in post-Soviet Georgia. Dunn describes how consumers in the Soviet Union came to trust canned food as safe, "knowing vaguely that the state had standards for production, without needing to know too much about how, precisely, the food was made" (Dunn 2008: 247).

Consumers of modern, industrial food in the West have come to trust the date label as an indicator for food safety and quality in a similar way. The paradox with the date label is that even though it was put in place to enhance consumer knowledge, enabling buyers to judge the safety and quality of industrialized food (Milne 2013), over time it has muddled our (sensory) knowledge of food itself. Many scholars have pointed out that consumers have come to depend on it in such a way, that today the expiration date is often trusted more than one's own senses and therefore directly related to undesired food waste (Tsiros and

Heilman 2005; Abeliotis, Lasadiri, and Chroni 2014; Aschemann-Witzel et al. 2015; Stilling Bilchfeldt, Mikkelsen, and Gram 2015; Yngfalk 2016a; Lind Melbye, Onozaka, and Hansen 2018; Wilson, Miao, and Weis 2018; Mattila et al. 2018; Yngfalk 2016b). However, with the current discussion about food waste, cracks in the black box of the date label are becoming visible.

> Black boxes 'work' in so far as they are held together by contingent 'assemblages' of institutions, rules, social hierarchies and tacit understandings. Because of this, black boxes do not always travel smoothly from place to place or from one historical moment to another. Cracks may appear under the strain of new externalities, calling into questions what is inside (Paxson 2016: 269).

Here is where the empirical analysis contributes to our understanding of black boxes. Rather than taking the date label and its connection to food waste as a given, I open the black box of the date label and unravel the internal complexities inside the milk carton. I show how human and non-human actors are entangled and connected via the expiration date throughout the milk chain – on the one hand co-constructing the double black box that hides the properties of the product milk, and on the other being strongly influenced by their own construction. By better understanding how the ideas about food quality and the expiration date of a product are interrelated and co-constructed and by questioning the connection of the date label to food waste we might find alternative solutions to the problem.

Background: Norwegian dairy industry and the expiration date

I chose milk as an example for the exploration of the expiration date due to its importance in the human diet[i] in general and in Norway in particular. According to the Information Office for Dairy Products (*Opplysningskontoret for meieriprodukter*), total milk consumption in Norway was approximately sixty-nine liters per person in 2018, making milk a substantial part of the Norwegian diet.[ii] The majority of the milk consumed is pasteurized, fresh, drinking or fluid milk, which comes as either full fat, low-fat, semi-skimmed or skimmed. In the reminder of the article I will focus on this product and call it simply milk. The use of UHT

or powdered milk is rather marginal in Norway and will therefore not be part of this article. Milk in Norway is literally sold in a black box – even though often white on the outside, the milk carton is generally dark on the inside to avoid the undesired sun-taste (see for example (Airado-Rodríguez et al. 2011).

Norway is self-sufficient in milk production, and the amount produced is regulated to prevent over-production.[iii] Only three different companies produce all the milk consumed in Norway. This means that Norwegians have a limited choice of just three brands and four different fat contents. Based on my findings, I argue that within these choices no other quality parameters are as guiding and determinant as the date label. Further, these choices are what I call 'stable parameters for valuation' as they do not change during the lifespan of milk, while the shelf life is 'dynamic', influencing production, retail and consumption to a much higher degree.

In Norway and in other parts of the world, ideas of milk being good food for health and growth, especially for children (Wiley 2016), have "endowed milk with its modern job of sustaining an aura of goodness and purity in Western society" (Valenze 2011). However, milk did not always have this pure and healthy image. Given the high perishability of milk, in the late 19th and early 20th centuries, it was commonly associated with disease and epidemics (Atkins 2016 (2010)). Milk, due to its high nutritional value and water activity and a neutral pH, serves as "an excellent growth medium for different micro-organisms" (Claeys 2013). The more time passes, the more the microbes multiply.

All food is unpredictable and ephemeral, and, therefore, to ensure product safety and quality, consumers were provided with a legally constructed and regulated cut-off date, after which they should consider products as not safe or at least not pleasant to consume. Date labelling, as a quality indicator, was first regulated in Norway in 1975 by the National Regulation of Labelling of Consumer Goods (*Forskrift om merking av forbruksvarer*) issued by the Ministry for Consumers and Administration. Today *EU Regulation 1169/2011* guides all the date labelling in Europe (even in EU's non-member states, such as Norway).[iv] The reason for this standardized expiration date was a change in foodways (industrialization, globalization and the supermarket revolution) during the 20th century (see Plasil forthcoming). The distance between *field and fork* (Poulain ; Eden, Bear, and Walker 2008a; Sassatelli and Scott ; Zachmann and Østby 2011) became too vast for the consumer to

understand and relate to. Imported, hitherto unknown food that was canned, frozen or vacuum packed and sold in impersonal supermarkets deprived consumers of their ability to judge the freshness and quality of products. The date label was put in place to enhance consumer knowledge.

Milne describes the historical development of date labeling in Great Britain (Milne 2013). However, when examining the legal documents, I discovered that the Norwegian case differs from that in the UK as here the safety-based *use by* (with some laws about food safety and dates already existing in the 1950s) came before the quality-based *best before* (which dates from the late 1970s) (Plasil forthcoming). Today, both dates exist and are used depending how a food is categorized.

Originally, milk was categorized as a *highly perishable product* and therefore had a *use by* date, advising consumers to consider the product unsafe to eat after the expiration date has passed. However, on November 28th, 2008, the Norwegian Food and Hygiene Authorities (*Mattilsynet*), allowed the date label to be changed to *best before*. This told consumers that a product might not have the adequate quality anymore but was generally still safe to eat. Quality is a "hybrid of social construction and physical realities" (Feltault 2009), which "changes over time and is relative" (Atkins 2016 (2010)). The re-definition of milk from a *highly perishable* to a *regular* product is in line with this thought. The physical reality of milk did not change overnight, but because of changes in the production technologies (for example better hygiene, stable cold chain and pasteurization), it was possible to handle the perishability of milk better and therefore to re-qualify milk from highly perishable to regular.

After a short description of the methods used, I will use the remainder of the article to show and analyze this interplay between the physical realities of milk and the technologies, decisions, and practices along the food chain. Human (producers, scientists and technocrats) and non-human actors (microbes, temperature, technology and machines) co-construct the expiration date that then becomes the defining quality parameter of the black boxed product milk.

Method

I followed milk along the whole food chain in Norway. The food chain is a "large system of mutually interconnected phases, links and locations" (van Otterloo 2005). According to her

locations are places where “transformations” of raw material into food take place and individuals and groups are active in handling food. Building on this definition of the food chain, this article describes several locations: farm, truck, dairy, laboratory, printer, supermarket, home and waste bin/drain. To gather the necessary data, I did observations combined with interviews.

I conducted thirty-seven interviews in the period between May 2016 and September 2018. Informants were chosen particularly for their role in the Norwegian milk chain. All interviews were recorded, transcribed, color coded according to topic and reviewed to understand how the expiration date is constructed and practiced throughout the food chain. I consulted the necessary legal documents on which date label legislation is built (such as the National Regulation of the Labelling of Consumer Goods of 1976) and practiced (for example ISO guidelines for milk testing) in order to be able to place the findings from the interviews in a wider context. I furthermore followed the coverage about developments in the milk sector, date labelling and food waste prevention (for example, about the implementation of an additional sentence to the date label) in local and national news; websites of the food industry, government or NGO’s, and social media (for example facebook pages by dumpster divers and anti-food-waste activists) to better understand how these issues are presented and discussed in public.

Together with NOFIMA (Research institute for applied research within the fields of fisheries, aquaculture and food)[v], I did an internet survey among consumers. From mid-September to mid-November 2018, 373 people filled in the survey. The data was then coded and analyzed, while the open questions gave wider insights about consumers’ ideas around the date label. The data collection was aimed at giving the reader a broad and detailed picture of the role that the date label plays in today’s milk chain in Norway (with possible parallels beyond).

Timeless milk? From the farm to the dairy

The first part of our journey concerns the time that milk spends without a date label – “timeless milk” so to say. Here the quality is less determined by the remaining shelf life but by the milk’s intrinsic properties like fat content or number of microbes. However, what happens at the farm, during transport and at the dairy facility are of crucial importance for the final product and the length of its shelf life. During the interviews I learned that only the

highest quality raw produce, handled with the utmost care and protected by the most modern technology, will become fluid, drinking milk rather than yoghurt, cheese, soured milk or powdered milk.

At the farm

The view over the bay at a farm in central Norway is breathtaking. The sixty cows are either grazing outside or feeding on fermented hay inside the stable. Lazily they look at the intruders and then continue with their eating and resting. According to the farmer, healthy cows are of great importance for the quality of the milk. The biggest danger are infections of the udder, which do not only lead to painful mastitis but also to milk that cannot be used for consumption.

Every now and then, one of the cows gets up and wanders towards the milking robot. Most cows will visit the robot about two to three times a day. The farmer tells me that using robots makes sense because robots guarantee efficient and hygienic milking, while at the same time providing the farmer with valuable data about every cow. He shows me the pages and pages of information he has gathered. They record not only the fat and protein content but also the number of bacteria, leading him to joke that his cows have more thorough health checks than most humans. Using this information, he can optimize his product, as this is crucial for all the following processes, including the length of the shelf life. Furthermore, his payment depends on these data. The price of milk at the farm is based not only on fat and protein levels but also on the number of bacteria in the raw milk.[vi] If the bacto-count shows less than 100,000 units per milliliter, this “elite” milk achieves a higher price than basic milk (class 1). Higher amounts of bacteria in class two or three reduce the price per liter.[vii] Proudly, the farmer shows me that his farm has produced elite milk every month since 2012.

When showing me the milking robot, the farmer explains how the udder is automatically cleaned before the milking process. The milking takes about eight minutes, while a computer continuously controls the quality of the milk. In case it is below standard, it will not enter the tank. Here, the automated technology ensures a constant quality inside the 6,000-liter tank. Still, the farmer told me that he regularly opens his tank to check the milk by looking, smelling and tasting. Inside the tank, the milk is rapidly cooled down to

about four degrees Celsius to limit bacterial growth while it is waiting to be picked up by the dairy truck.

At this location, the quality of milk is determined by its physical realities (protein, fat, number of bacteria and cell count). These material properties then determine the length of the expiration date. The higher the quality, the longer the shelf life; therefore, delivering elite milk to the dairy is not only a question of personal pride and income but also determines the future fate of this milk.

The dairy truck

Early in the morning, the dairy truck arrives. This happens every two to three days. According to the farmer, this schedule is unproblematic for the quality and the expiration date of the milk as long as the milk is stored properly (i.e. cool). As the raw milk does not have an expiration date yet, the "freshness" of the product depends less on time itself than on the technology that protects it (Freidberg 2009).

Before allowing the milk into the truck, the driver climbs to the hatch of the farm tank to look at and smell the milk. Are there any impurities in the milk, and does the milk smell fresh? According to the dairies, this sensory testing is fast and secure. The drivers are not only trained in how to taste and smell the quality of milk, but they also follow a certain routine defined in the Dairy Analysis Book.[viii] The human sensory ability to judge milk has been standardized and regulated to ensure uniformity in the product quality, which is necessary to guarantee the standardized shelf life.

If the milk smells and looks according to standard, the driver will take a sample for analysis at the dairy. The farmer receives detailed test results four times a month – this not only for justifying the payment but also to allow necessary adjustments to enhance the quality. Once all testing is done, the driver connects the pipe to the truck and starts the pump. During the pumping process, the temperature is constantly monitored - if the milk were to go above ten degrees Celsius, the pump would automatically stop. Keeping the temperature low during transport is crucial as well. Norway, with its cold climate, is ideal in that sense as the environment supports the technology. The trucks are insulated to keep milk from getting too warm in summer and from freezing in winter (Hagenes 2010).

Once the milk arrives at the dairy, it undergoes more tests before entering the large tanks (approximately 100,000 liters). Only if all tests prove satisfactory, can the milk enter the

tank. The general view among the dairies was that the advantage of keeping the quality uniform by keeping all milk in one single tank was more important than the risk of one batch of contaminated milk ruining the whole tank.

The dairy truck not only transports the milk but also protects it, while the driver ensures that the milk has the necessary quality to produce a standardized shelf life. At this stage, (standardized) human senses and technology together make up the product milk that is now entering the dairy facility.

Inside the dairy facility

Dairies are not the easiest places to visit as hygiene is essential for milk quality and shelf life, and any contamination by outsiders could lead to the waste of milk. Therefore, during my visit I had to get dressed in a white lab-coat, wear hat and shoe protection, and have hands and shoes disinfected. The facility close to Oslo had very modern equipment, and most processes were fully automated. By regulation, milk can stay in the tanks for a maximum of thirty-six hours. The fresher milk is used for fluid milk and the older for yoghurt, but normally the milk is in and out of the facility within twenty-four hours according to management.

Within these twenty-four hours, the raw milk goes through several processes before becoming the milk most consumers know. Protected with goggles and earplugs, we walked under a labyrinth of shiny silver pipes, valves and tubes transporting the milk from one production process to the next. First, the milk is *separated* into skimmed milk and fat. The fat is then *homogenized* (broken up in smaller fat particles), so that the fat does not swim on top of the milk. Afterwards, it is mixed with the skimmed milk again in a *standardization* process, which gives full fat, low fat and ultra-low fat (skimmed) milk. Most dairies told me that they apply the same shelf life to all types of milk, regardless of fat content.

The next step is *pasteurization.* Both literature (Atkins ; Valenze ; Claeys 2013; Lucey 2015) and dairy managers identify this process as most defining for the shelf life and safety of milk. Pasteurization has been obligatory in Norway since the 1950s to reduce the risk for diseases. The milk is heated to seventy-two degrees Celsius for approximately fifteen seconds. This is enough to exterminate most of the microbes. Afterwards, the milk is rapidly cooled down to about six degrees Celsius to keep the new bacterial growth low.

Atkins reminds us that quality cannot be taken for granted, as it is instable and vulnerable (Atkins 2016 (2010)). As the natural product milk is prone to change its properties due to microbes even after pasteurization, constant checks are necessary to ensure the quality. Samples are tested physically (pressure, temperature and pH), chemically (fat, protein and dry parts), micro-biologically and sensory-wise. All informants put a strong emphasis on the sensorial test, stating that machines cannot replace the senses of humans. However, needing to produce a standardized product with a standardized shelf life, even the use of the senses has been standardized rather than being left to individual bodies (Freidberg 2009). "We have to follow the standard procedure. Everybody has to do the same here," I was told by one dairy manager.

A report about food loss along the production chain in Norway shows that in 2017 the food loss of dairy products was 2.1% during production (Elstad Stensgård et al. 2018). I was told that this loss was generally due to technical problems with the machinery (leaks, etc.) or due to necessary cleaning, rather than durability or quality. Older or lower-quality milk, not having reached the standard for milk, is turned into yoghurt or powdered milk or used as animal fodder (which, according to the dairies, is not seen as food waste in Norway). Here, the adaptability of the still "timeless" product milk helps to avoid food loss.

The last step milk has to undergo before becoming a standardized black box is to be filled into a milk carton. During this process, hygiene again is of utmost importance as the milk leaves an enclosed system for a short time. All dairies stressed that recent improvements at this stage had an important influence on the prolongation of the shelf life. The most modern machines, called 'ultra-clean', give the longest shelf life. There, the milk is not exposed to water or air, and therefore the expiration date could almost be doubled compared to ten years before.

Once the milk is securely sealed into the carton, the expiration date will be printed onto the label. Before looking closer at this quality defining moment, I will sidestep into the laboratory to bring together all these different actors, properties and processes that together make up the date label.

Black boxing milk: from the laboratory to the printer

Laboratory

The construction of the expiration includes constant testing to predict what will happen in the future. During these tests, the milk is pre-incubated and left in warm conditions to simulate expiring milk. Furthermore, the dairy registers consumer complaints and uses this feedback to determine the shelf life of milk.

Milk generally has a shelf life of fourteen days in Norway. This standard can be adapted slightly by individual dairies according to circumstances. High temperatures in summer might lead to a slightly shorter shelf life. The producer is responsible for the date as, according to my informant from the food authorities, "the producer knows the raw material that is used, the production method and similar things." The expiration date is an assemblage of human and non-human factors and actors. It is humans that set the date, but as we have seen there are many non-human actors (such as bacteria or machines) that play an important role in this process. I identify five main pillars on which the date label rests. Three are based on the past: the *intrinsic properties* of the natural product (bacteria, fat, protein, etc.), *hygiene* along the food chain, and the *technology* used to handle and protect the milk (milking robot, dairy truck, etc.). The other two are future-oriented and include *predictions* based on the knowledge about the technological conditions the milk will encounter in the remainder of the food chain, and *risk assessments* based on assumptions about future human behavior. Or in other words, as the Food and Hygiene Authority states, "The shelf life should be based on customary, realistic transport, storage and sales times. It should also consider the usual way of storing the product, including a safety margin."

Let us look at the *predictions* first and take the average supermarket temperature as an example. While in Sweden, the average supermarket storage temperature of eight degrees Celsius allows a shelf life of only eight days, the lower four degrees Celsius in Norway allow fourteen days (Møller et al. 2014 Rosengren and Nurttila, 2014: 26/27). Here, knowledge of the technological conditions which the milk will meet makes a prediction of the shelf life possible.

However, not all is predictable, and therefore a great part of the shelf life depends on *risk assessment.* Paxson describes this as "anticipating possible encounters between types of foods and types of eaters. As such, regulatory categories are designed to cast a

wide net of possibility, wider than would circumscribe most actual encounters" (Paxson 2016). Yngfalk goes as far as to state that "food consumption is standardized to risk assessment rather than natural particularities" (Yngfalk 2016a).

Based on what I described above, I would probably not go so far as to say that risk assessment weighs that much heavier than natural particularities. However, risk assessment and assumptions on consumer behavior play an important role. Research done by the Information office for dairy products (*Opplysningskontoret for meieriprodukter*) in 2016 showed that milk was still without detectable change in taste or smell thirty days after the expiration date.[ix] Even though this test was done under standardized and monitored laboratory conditions and lower fridge temperatures, one could argue that producers are too cautious when setting the expiration date.

At this location, we can see how the different human and non-human actors assemble and co-construct the expiration date of milk. Once the date is set, it becomes black boxed and conceals the many different properties and processes that went in there to create it. From now onward this standardized information will be the most important parameter for the milk's quality determination with far reaching consequences for the evaluation, pricing and discarding of the product. This is the first level of black boxing. Let us now turn to the printer where the second level of black boxing happens.

Printer

After the first level of black boxing where the expiration date is constructed, this date is then printed on the carton which then in itself becomes literally and metaphorically a black box containing the now standardized product milk.

During my visits to different dairies, I learned that even though the labelling process is automated and controlled by a computer, humans change the product information each time a new product passes the printer. The operators consult the standardized manual to set the right date for the label. If they do not change the product code, milk could hypothetically end up with the expiration date of yoghurt (up to forty days). Therefore, the operators stressed that they controlled the labelled cartons every half hour. This is important as within a split second the date is irreversibly printed onto the packaging.

With this, 'real time' becomes 'set time', and the milk changes from having a life span determined by taste, smell or micro-bacteriological testing, to a product with a

standardized, pre-determined shelf life. The standardized expiration date now sets the clock for transport, sale, consumption and discarding. It also sets the price, as milk too close to the expiration date is down-priced (both in wholesale and retail). The date label is also central to logistics as both the ordering and tracing of products are based on the expiration date. The remainder of the article will focus on the consequences of this double-black boxing of milk.

Standardized milk

Even though time plays also an important role at the previous locations, its influence is still of less importance than for example temperature. This changes once the milk is black boxed and labelled, as the next three locations will show.

Transport to the retailer

It is busy at the large transport facility on the outskirts of Trondheim, in mid-Norway. Trucks come in and out, loading and unloading their cargo, pallets of food are moved to and from the facility. Transporting packaged milk from the dairy to supermarkets is a race against time and highly competitive. Transportation time is a challenge given the length of Norway and its sparse population. Getting milk to the North of the country can be very testing. A representative of one of Norway's leading food transport companies told me:

> Delivering to the north of the country is just as if I would drive from Oslo to Paris.[x] The biggest challenge for us are products with a short shelf life. Then we sometimes have only two days for transportation – these disappear due to the long distances. We use the shortest time possible, driving through Sweden. This also gives us an advantage towards competitors. If the products come to the shop with many days of shelf life left, then that is an advantage for us.

Even though speed of transportation has increased in the last century, so have the distances. In 1900, there were about 800[xi] dairy facilities in Norway, today there are fewer than forty. As stated above, Norway's milk industry is self-sufficient and protected; therefore, Norwegians generally consume Norwegian rather than imported milk, which then has to be transported Norwegian distances.

Furthermore, a specific regulation, STAND 001, regulates how many days of the shelf life are allocated to the producer, distributor/transport/whole-sale and the retailer/consumer. These regulations have to be followed by all actors in the food chain. If the granted amount of days allocated to the supermarket is below agreement, this leads to a reduction in payment to the transport company. Supermarkets would normally not reject products that have come too close to the expiration date, but rather try to sell the milk anyway, as an informant managing a large supermarket told me:

> Yes, it happens that you get deliveries that do not have the necessary amount of days. We have some agreements with our main transport company on what shelf life we can expect. But, in many cases, there will be a dialogue between us and them, and we say 'Ok, then I try to sell as much as I can from this, but you have to cover my losses.

In the transport sector, the expiration date not only determines the conditions for work (as fast as possible) but also the price, as milk too close to the expiration date will mean losses in money for the transport company. This, however, goes unnoticed by the customer who is generally not aware of the logistics, agreements and dates behind the product.

In the supermarket

After a long journey, the milk finally reaches the supermarket shelves. Here, they sit cooled down to four degrees Celsius; energy loss is minimized by protective glass doors. Products are sorted by brand and fat content, but where in the queue a particular milk carton will be placed depends on the date label. Short shelf life is found in the front and longer in the back, which – undesired by supermarkets – leads to "shelf-digging consumers" (Yngfalk 2016a) trying to find the milk with the longest remaining shelf life. Research shows that 76% of consumers will go deep into the shelves in order to pick out the milk with the longest remaining shelf life (Nostat 2016).

"We've come to see freshness as a quality that exists independent of all the history, technology, and human handling that deliver it to our plates" (Freidberg 2009: 17). Many consumers are unaware of the many properties and processes that have led to the date label, and, unable to smell or taste the black-boxed milk in the shop, supermarket workers

and consumers can rely only on the date to determine the milk's (remaining) quality and freshness.

Authors such as Whitelaw (2014) and Yngfalk (2016) describe the uneasiness supermarket personnel has with wasting edible food only because the expiration date has passed. Also, all supermarket staff I interviewed agreed that keeping the balance between food quality and waste is a major challenge. This dilemma became clear as during one interview there was first talk about an excessive and often unnecessary obsession with freshness, but then my informant told me: "But let us not forget that if we do not follow the expiration date and if we have a shop full of old food, it will be another chain that survives." Nobody wants to go to the old days when food quality in Norway was rather poor, as one retired informant told me: "In the shops out here, all was old. And the milk was just kept outside the store in the sunlight and nobody cared."

Therefore, all supermarkets agreed that they would not sell products after the *best before* date, but all do sell products that are close to the expiration date for a reduced price. However, supermarkets have to be careful with down pricing as at some point the balance between production costs and selling price is disproportionate. Selling an old product with a loss while a fresher one is not sold makes no sense from neither a market nor a waste perspective, as several supermarket managers explained.

Dairy products counted for 0.8 % waste of the economic value in 2017, compared to 1.1% in 2015 (Elstad Stensgård et al. 2018). Most people I spoke to attributed this not only to new, automated buying procedures but also to the success of down pricing. However, this success at the supermarket level can cause more waste at the consumer level, as consumers cannot eat short-lived products on time (Aschemann-Witzel et al. 2015; Aschemann-Witzel, De Hooge, and Normann 2016).

The expiration date determines the placement, evaluation and price of milk at the supermarket level. Within the different choices (brand and fat content), it is the most defining parameter of quality for milk, and, in the tough competition for shelf space and sales, it is a defining attribute. It sets the spot where a product is placed and determines its price both when it comes into the supermarket and when it goes out. Supermarket managers admitted that they do not have a good solution for the dilemma of freshness versus waste and have asked for producers to set a date as far in the future as possible to

prevent waste at the supermarket level. In this demand, they were joined by the Consumer Protection Agency (*Forbrukerrådet*) who argued that consumers need the longest shelf life possible as to prevent household waste.

The consumer

Every morning when pouring milk into my daughter's cup, I am confronted with the dilemma: senses or standards? And even when I use my senses and do not blindly trust the date I will most likely still be influenced by it. The anthropologist Sutton reminds us that "tastes are not separable from the objects being tasted" (Sutton 2010: 218). One quote from the answers in the survey makes this particularly clear: "I am one of those who throws out food once it is out of date. I know that I can smell it and I do, but, once it is over date, I find it tasting bad and the box blown up."

Consumers are a long distance away from where the milk has started its journey and therefore have come to trust the date more than their own senses. The black boxed expiration date, put in place for consumer information, has reduced consumer knowledge about food quality and safety. As our food chains have become longer, people have come to trust standards more than senses. "Thus, paradoxically, the same forces that seem to alienate the consumer from modern foods can work to produce trust in food" (Bildtgård 2008: 112). Bildtgård, moreover, identifies the food label as "the only actual contact between the consumer and the production process" (ibid: 117). The black box date label became very successful in that sense. 34% of our respondents said that they have thrown away food based on the expiration date alone. Furthermore, many wrote that they need better guidelines on how to judge food. How should it smell or taste? How do I determine that it is safe and pleasant to eat? How do I keep food once it is open?

As described above, assumptions about consumer behavior co-determine the expiration date. Producers' worries about transport, handling and household fridge temperature reduce the possible length of the shelf life substantially, and shorter shelf lives leads to more waste at the household level. This vicious cycle of cause and effect seems hard to overcome. All my informants agreed that it would not be useful to abandon the date label altogether, as food has become too complex for people to securely judge, and insecurity would lead to even more food waste. Still there are things to be done.

Today, there are campaigns in many countries[xii] trying to re-educate consumers to reduce the waste of food. Since 2017, an additional sentence "often good after" reminds Norwegian consumers that food is not automatically bad once the *best before* date has passed. 57% of the respondents agreed that this addition explains the date label better, and 63% now feel safer about the quality of the product past the date. Still, there is more that should be done to help consumers reduce waste. Possibilities are reduced package sizes (in Norway most milk is sold in one-liter cartons) and more information on the package itself. Rather than quizzes or pictures found on the carton, producers could put information about handling and storage, recipes of what to do with old milk and encouragement to smell and taste the product inside (something that is planned to be done in Norway). This information printed next to the date label, rather than found on far away websites or in brochures, could help consumers handling the black box expiration date in a more sustainable way and ease the dependence of consumers on the date label as the main parameter for the evaluation of quality.

Expired – what now? Conclusive remarks

Behind the bright lights of the supermarket one finds the waste bins. Here the 'life' of the milk ends, once it passed the expiration date. According to one interview partner the milk is tipped out and lost, while the carton is recycled. Most supermarkets I talked to, work together with the local food bank (*Matsentralen*), giving away products with a short remaining shelf life, but according to the manager of one food bank, once the expiration date has passed, they will not accept a product anymore. Some retailers give away out-of-date products to their employees or use them in the canteen. The percentage of waste has gone down by 29% for dairy products in the last two years at the supermarket level (Elstad Stensgård et al, 2018: 38). There also has been a reduction in dairy waste caused by the date label from 44% to 16% at the consumer level (ibid: 47)[xiii].

To reduce these numbers even further there has been a concerted effort by the Norwegian government and the food industry. In June 2017 five ministries (headed by the Ministry for Climate and Environment) and twelve organisations representing food industry and trade signed the Trade Agreement about the Reduction of Food Waste (*Bransjeavtale om reduksjon av matsvinn)*[xiv] to reduce food waste with 50% by 2030. using a whole chain approach. By understanding the expiration date not as a given, static standard but as an

assemblage of several intrinsic qualities, technologies and human decisions and by seeing the connection between the expiration date and food waste not as inevitable it might be possible to achieve this goal.

In this article I have shown how human (bureaucrats, producers, retailers, consumers, etc.) and non-human (microbes, packaging, cooling systems, trucks, etc.) actors co-construct the expiration date of milk while vice versa the expiration date governs the different production processes and technologies as well as the buying and consumption practices throughout the whole food chain. The milk that we consume is the result of two different black boxing processes in which the date label translates the complicated processes and qualities into a single parameter for price and quality and acts as a mediator between *field and fork*. In a competitive market, since neither producers nor retailers want to take any quality-risks, the shelf life is always shorter than the real life. At the same time consumers often trust the date label more than their own senses. Consequently, products are not sold and consumed until the last possible moment of their natural life but rather discarded when they reach the standardized end of their shelf life – leading to avoidable waste.

Like this the date label is constantly consciously made into a cause for waste. Throughout the article I have shown examples of these decisions: Farmers can avoid surpluses in winter by controlling calving. Producers can use older milk for making yoghurt rather than discarding it. Supermarkets can accept short lived products for reduced prices and donate food close to the expiration date to food banks. These could theoretically accept even older products than they do now (according to the authorities in Norway it is legal to sell food past the best before date). Consumers could also take their responsibility by not choosing the easy solution of discarding products due to the date alone but could act sustainably in their buying, cooking and discarding practices. In this they could be supported by the government and the industry.

Most of my informants (even from within the food industry) agreed that it is the constant, easy availability of food, a throw-away mentality and the discrepancy between the perishability of food and the practices of consumers that are mainly responsible for household food waste. Here, both the government and its agencies and the food industry could be more active and in educating and informing consumers properly. They could start

with school children and make them aware of their own senses while simultaneously discouraging wasteful behavior. The milk that we drink has come a long way. A lot of work and energy has gone into it, and all this deserves a better treatment than being thrown away prematurely.

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Notes

[1] http://www.fao.org/dairy-production-products/en/

[2] https://www.melk.no/Statistikk

[3] https://www.melk.no/Kosthold-og-helse/Skole/Fakta-om-norsk-melk

[4] https://lovdata.no/pro/#document/NLX3/eu/32011r1169?searchResultContext=2032

[5] https://nofima.no/en/about-us/

[6] https://medlem.tine.no

[7] TINE Råvare Produsentavregning, Melkepris og satser, 2018

[8] TINE Råvare Produsentavregning, Melkepris og satser, 2018

[9] Presentation Tine 2010

[10] https://www.melk.no/Kosthold-og-helse/Melk-og-helse/Melken-er-holdbar-lenger-enn-du-tror

[11] This is true according to google maps: Oslo – North Cape: 1,962 kilometers, Oslo – Paris: 1,698 kilometers.

[12] https://snl.no/meieri

[13] See COSUS and FUSION at a European level, Nordic Council for Nordic countries etc.

[14] Note: the possible answers from the 2015 and 2017 research have unfortunately changed making it hard to directly compare the findings

[15] https://www.regjeringen.no/no/aktuelt/avtale-om-a-redusere-matsvinn/id2558931/

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9.3. “Best Before, Often Good After”: Re-Scripting the Date Label of Food in Norway

Introduction

In January 2018, the largest Norwegian dairy company, TINE AS, held a poll on their Facebook page asking followers to choose wording options for a supplementary phrase that would be added to the original expiration date label of food, *best before*. They asked their followers: *What do you vote for? The phrase you like best will be used on our products to remind us all to waste less food.* Their post was viewed 212.000 times, shared 70 times and commented on 675 times. A week later TINE announced that option three: *men ikke dårlig etter* (but not bad after) was chosen above the two other options: *se – lukt- smak* (look, smell, taste) and *og ofte god etter* (and often good after). However, after having been in use for only a few months TINE AS changed the wording again to *best før [date] ofte god etter* (best before [date] often good after”). The poll may seem trivial, but it speaks to an underlying problem, namely food waste, an issue seen as increasingly problematic not only in Norway but global. Goal No 12 of the 2030 UN Sustainable Development Agenda states:

> “Each year, an estimated 1/3 of all food produced – equivalent to 1.3 billion tons worth around $1 trillion – ends up rotting in the bins of consumers and retailers, or spoiling due to poor transportation and harvesting practices.” (https://sustainabledevelopment.un.org/sdg12)

Besides the moral dilemma and financial waste, food waste also produces unnecessary energy consumption and CO2 emissions. According to the UN food productions stands for 30% of the world’s energy consumption and 22% of greenhouse gas emissions. While in the global south most food gets lost during harvest and transport, in the global north consumers are largely responsible for food waste. Recent research in Norway shows that 58% of food is wasted at the household level (Elstad Stensgård et al. 2018). Consumer food waste is a problem that needs to be addressed. In Norway one approach was to focus on the wording of the date label of non-highly perishable goods: *best before (date)*. In 2017, several

Norwegian food producers started labelling their products with a voluntary, supplementary sentence[86]: *best before (date) often good after.*

In this article, I show how global objectives like the UN Sustainable Development Goals are being translated into everyday practice through the construction and re-construction of everyday tools and technologies. More precisely, the focus point of this article is not a political figure, grand scheme or social movement but a seemingly simple, mundane, every-day means: a date label. It is treated not as a "mere prop for social action" (Prout 1996: 199) but as an actor actively shaping and being shaped by social processes and practices. Following the date label through time shows us "how ordinary objects and technologies are made to speak for politics" (Woolgar and Neyland 2013: 3).

Adding words to the expiration date, even though seemingly trivial, is emblematic for wider changes that happened in society since the implementation of the original date label in the 1970s. As I will show below, originally, standardizing the natural and unpredictable lifetime of food into a pre-set, calculable and effective shelf-life time helped to secure food safety and quality and guaranteed a smooth working of the market. However, unforeseeable for the makers of the original date label, it changed how consumers perceived and used food products. Following what they thought is the prescription of the shelf-life time, consumers often discard food prematurely. This issue recently has received ample attention in the media (e.g. "Norwegian consumers have date fear" in Adressa, April 2018), in reports (e.g.Elstad Stensgård et al. 2018) and in academic publishing (e.g.Evans 2012; Watson and Meah 2013; Aschemann-Witzel et al. 2015; Stilling Bilchfeldt, Mikkelsen, and Gram 2015; Yngfalk 2016b; Aschemann-Witzel et al. 2018; Mattila et al. 2018; Närvänen et al. 2020). Today the date label is one of the most important means to determine the quality of food *(reference anonymized for review purposes)* while at the same time causing unsustainable (household) food waste. I argue that the date label has changed from being exclusively a means for food policy regulation to an environmental issue. By using two concepts from Actor-Network Theory, *translation* and *script,* I will show *why* and *how* this move has happened, who the important actors were and what that tells us about the underlying politics of the time.

[86] In Norway it is called "supplerende datomerking" (supplementary date labelling)

On scripts and translations

In Actor-Network Theory (ANT) actor-networks are heterogenous and shifting assemblages in which human and non-human (nature, technology) actors are brought together to execute certain actions (Latour 2005). Central in the mediation between objectives and action are the concepts of *translation* and *script*. In this context *translation* is the "mechanism by which social and natural worlds progressively take form" (Callon 1986: 19). Through translation entities enrol and speak for each other (Law 1992; Prout 1996). This is a process before it is a result (Callon, 1986). This process is about reaching a settlement about often conflicting priorities of a variety of actors and between the objectives and strategies of human actors and the performances of technical and natural actors (Beveridge and Guy 2009: 72). The more actors are committed, the more stable the network. In order to be made real, imperatives, issues and goals have to be translated into everyday practice and understanding, thereby becoming embedded in relations between actors. Seemingly humble and mundane technologies like a label can perform these translations. "If political rationalities render reality into the domain of thought, these 'technologies of government' seek to translate thought into the domain of reality" (Miller and Rose 2008: 32). However, this is an ongoing process as "for an actor-network to be extended over time and space, for power to be exercised at a distance, the actor-network has to be constantly produced and re-produced in socio-technical relations" (Beveridge and Guy, 2009: 73). It has to be translated and re-translated in very specific contexts of time and space through shifting constellations of actors (McLean and Hassard 2004: 494). The case-study presented below shows how global goals are translated into everyday practice through the seemingly simple and mundane technology of date labelling. What is happening in Norway at the moment is a re-scripting of the date label, adding a voluntary, supplementary phrase to clarify how the expiration date should be understood and used.

In this article I deal with two notions of script. Script as *noun*, referring to what is written, and the *concept* of script (Akrich 1992). According to Akrich, technologies (in the widest sense) contain a *script.* This script is based on the assumptions and hypotheses makers have about future users, it is "inscribed" into the objects or technologies and "prescribes" a specific use (Akrich 1992: 208). The date label can be conceived as a double script: it *is* literally a script, printed on the package but it also *contains* a script, prescribing a

specific understanding and use. However, this *script*, when moved through time and space, meeting different actors and objects, might take on different meanings and understandings. Here the concepts of *translation* and *script* meet, and the messy translation processes takes the form of different *scripts* (literally and conceptually).

The issue of food waste, and its threat to global environmental sustainability, redirected the perspective and goals connected to the date label. Its original script (*best before*) was scrutinized and questioned. New actors emerged and traditional relations and political approaches were transformed. These changes, combined with the modified objectives and strategies of human actors, rendered the performance of the government technology date label as not "up to date" anymore. Following the date label through time shows how these changes in actors and approaches have manifested in the *re-scripting* of the expiration date.

Methods

By following something one can discover the different networks, assemblages and actors working on it and being worked upon and thereby identify wider issues, problems, politics and ideas. By following people, materials and meetings (Wood 2016) associated with the date label I describe how the date label has been re-scripted in order to achieve UN goals. This case study is mainly built on interviews. Informants were selected based on their key roles within the processes and policies related to the (re)scripting of the date label both in the 1960/70s and today. Eighteen semi-structured interviews were conducted with 24 people about date labelling in general and the supplementary date label in particular. Sixteen informants were active in either the dairy industry (one of the first sectors where the supplementary date label was used) or in other parts of the food retail and production sector (for example Coop, Norgesgruppen, Asko). Further, I interviewed two employees from Forbrukerrådet (Norwegian Consumer protection agency), two from Matvett (the food and catering industry's interest organisation for the reduction of food waste)[87], two from Mattilsynet (Norwegian Food and Hygiene Authorities) and two NGOs against food waste. Interviews were taped and transcribed and then colour coded to identify patterns and

[87] The company was founded in 2012 is owned by the Interest organisation of Food and Beverage, the Foodservice Suppliers Association (DLF), the Grocery Store's Environment Forum and Interest organisation Tourism. Its main goal is to reduce food waste in Norway.

recurrent themes. I also took part in sector meetings like the *The Nordic Food Waste Conference* in Oslo in 2017 and the *Consumers in a Sustainable Food Chain Supply (Cosus) Conference* in 2017. Both conferences were taped, transcribed and colour coded (using the same codes as in the interviews).

To position the interviews in a wider context and to analyse the changes in ideas and issues over time, national and international law texts and reports were consulted and analysed, including the Codex Alimentarius (1962), the debates in both chambers of parliament (May 3 and 10, 1968), the Law about Food Labelling 1968, the Regulations about Food Labelling (1975, 1986, 1993) and the Food Information Regulation 2014 based on EU1169/2011, the UN Sustainable Development Agenda (2015) and the *bransjeavtale* (trade agreement) between government and food and hospitality industry of 2017. Furthermore, all issues of the *Forbrukerrapporten*, the quarterly magazine published by the Consumer Agency (1958-2010) and several newspaper articles from the 1960s and 1970s about the original date label and in the 2010s about the supplementary sentence were reviewed to gain insight into how ideas around food labelling and food waste changed over time in Norway.

Besides traditional media, I also conducted social media research, focusing on the aforementioned Facebook poll by TINE AS. All comments were printed and sorted according to the given answers and comments. The most interesting comments were from those voters who elaborated on their thoughts about this addition. Useful insights into consumers' perceptions and ideas about date labelling in general and the supplementary date label in particular could be gathered by this.

Between September and November 2018, I conducted an Internet survey among consumers in collaboration with NOFIMA (Research institute for applied research within the fields of fisheries, aquaculture and food)[xv], which 373 people filled out. The data was coded and analysed (the two open questions offered particularly helpful insights into consumers' ideas and knowledge about the date label). As this overview shows, the complex techno-social assemblages and processes required a *multi-methods* approach (Brewer and Hunter 1989) that could handle and integrate different types of data.

From Issue to Regulation – Translating Consumer Needs into the Date Label

Most food items are ephemeral and perishable (Watson and Meah 2013; Mattila et al. 2018) making them fun and frightening (Fischler 1988; Rozin 1999) at the same time. Naturally, food deteriorates and loses its quality over time. The date label was put in place in many countries during the second half of the last century to reshape nature (food) into measurable and calculable units (Asdal 2004) as it is "through technologies that political rationalities and the programmes of government that articulate them become capable of deployment" (Miller and Rose 2008: 63). In other words, the date label emerges as a means to deal with the perishability of food, translating the process of natural decay (natural time) into standardized, predictable shelf-life time. This legislation was based on high-modernist ideas (Scott 1998) and a strong sense of "technocratic optimism" about science and technology solving most of humanities' problems (Myrvang in Myrvang et al., 2004). The issue at stake was the problematic combination of the perishability of food and a growing industrialization of food production, which altered consumers' relationship to food considerably. New production methods, food imports, the supermarket revolution (Olsen 2010) and new packaging technologies (freezing, vacuum packing, tinning) (e.g.Finstad 2013) distanced consumers from food production and made it more difficult to judge the age, safety and quality of food items (Sassatelli and Scott 2001; Poulain 2017 (2002); Kjaernes, Harvey, and Warde 2007; Eden, Bear, and Walker 2008b; Zachmann and Østby 2011). This was deemed problematic by two actors within the consumer and food policy network. The recently founded Consumer Agency (Forbrukerråd)[88] and the Norwegian Labour Party (*Arbeiderpartiet*) who committed themselves to improving consumers' rights and advocated for a far-reaching law for consumer information and the labelling of consumer goods (including food). Guri Johannessen from the Labour Party for example argued that "consumers have a right to get basic information about products. There is a need for regulations that primarily focus on consumers' interests" (point made during the 112. Ordentlige Stortingsforhandlingen (discussion in parliament) in Odelstinget, May 3, 1968). To translate this issue into practice more actors had to be enrolled and technologies of government had to be constructed. To achieve this goal two strategies were chosen. First, consumers, still generally unaware of the issue, were enrolled by informing them about

[88] The Consumer Agency was founded in 1953.

their rights and to the possibility to "vote with their fork" (Rem 2008). Articles like for example "Skillful consumers – a path to a higher standard of living" (May 1958) or "Think before you buy" (December 1958) in the abovenamed *Forbrukerraporten* were used to do so. Second, the issue had to be translated into practical politics and government technologies. This had to be done against considerable opposition by both the food industry and more conservative political parties like *Høyre* and *Senterpartiet.* The fear was that a one-sided law would put Norwegian production, import and export at a disadvantage. When looking at the paperwork (reports, propositions, transcriptions of parliamentary debates) one can see how the original far-reaching law for product labelling, marketing and control was subsequently reduced to a pure labelling law, which was put into effect on May 24, 1968. The law was followed by the *National Regulation of Labelling of Consumer Goods* (*Forskrift om merking av forbruksvarer*) issued in 1975 by the Ministry for Consumers and Administration, which transformed the law into more concrete regulative policy. The issue of the perishability of food combined with the challenges of industrial food production and packaging had been translated into one, nation-wide regulation. The unpredictable natural lifespan of food was standardized into shelf-life time, taking away consumers' insecurities about the quality and age of the food they were about to eat. The newly established government technology date label was then able to "conceal for a time the process of translation itself" and turned "a network from a heterogenous set of bits and pieces each with its own inclinations, into something that passes as a punctualized actor" (Law, 1992: 386). Once a system or a technology is in place, the politics that led to it are often forgotten (Bowker and Star 2000). The date label became "black boxed" (Latour 1987, 1999) and the technical and scholarly work that had gone into it was rendered invisible to its users *(reference anonymized for review purposes).* The date label not only *delegated* the networks, decisions and actions that went into it, extending it through space and time (Latour 1991; Prout 1996) but also many consumer decisions and considerations were delegated to the expiration date.

This label enables people to shop, and later eat, without making decisions within a wide array of topics – from hygiene and safety to legal and moral questions about value and waste. The expiration date is thus not a neutral label that describes a reality, but it produces the exact realities that it is describing (Asdal 2015). A new issue arose due to a rising gap

between what the creators of the date label had *in-scripted* into it and how its users came to understand it.

Two Scripts, One Interpretation and the Growing Amounts of Food Waste

By legally pre-scribing date labels, the creators did not only literally inscribe a date on the package but they also *pre-scribed* a certain use, a relationship between the user and the product, imagining a path for future actions of users (Woolgar 1991a; Akrich 1992). Two scripts had been created: A *use by (date)* and a *best before (date).*[89] Highly perishable food products have to be labelled with a *use by* date telling them the product is unsafe to eat after the date has passed and should be discarded. The other version of the script, the *best before* date informs the user that, according to the producer, the qualities (smell, taste, colour, content etc.) might deteriorate after the date. This date alerts consumers that a food item might not be at its best anymore but presumably could still be consumed without endangering a person's health. It was believed that these two versions would make it easy for consumers to distinguish between safe and unsafe food on the one hand and between optimal and sub-optimal on the other. However, many complex properties and qualities of food products (the outcome of the industrial food production process) are condensed into the script of the date label (*reference anonymized for review purposes*), which makes it, even though mundane and simple at first glance, a complex and difficult *script* for consumers to use.

Unanticipated, consumers re-interpreted the two scripts and merged them into one – treating the quality related *best before* date as synonymous to the safety related *use by* (Evans, 2012; Watson and Meah, 2013; Aschemann-Witzel et al., 2015; Stilling Bilchfeldt et al., 2015; Yngfalk, 2016; Aschemann-Witzel et al., 2018; Mattila et al., 2018; Närvänen et al., 2020). Rather than using it as a guideline, consumers came to see the *best before* date as a threshold that should not be crossed. Far from being easy about wasting food, consumers still do so because they believe that a product is not safe or at least not pleasant to eat once the *best before* date has passed (Aschemann-Witzel et al. 2018: 170). The following quote from the survey illustrates these perceptions:

[89] See *Forskrift om matinformasjon til forbrukene (matinformasjonsforskriften)* (Regulation on the provision of food information to consumers) from 2014.

> "I am one of those people who throws away food immediately once it is out of date. I know I can smell it, and I do that, but once it is expired, I feel it smells bad and the carton looks blown up" (open question response in survey, September-November 2018).

Note how the date not only replaces the senses in the process of deciding what to eat and what to throw away, but also induces a particular perception (carton *looks* blown up), overriding the evidence provided by the senses.

This perception of food caused by the misinterpretation of the *best before* date is an important contributor to growing amounts of food waste (European Union Committee 2014; Elstad Stensgård and Hanssen 2015; Norstat 2016; Elstad Stensgård et al. 2018). Cracks in the *black box* date label became visible (Paxson 2016), making it possible to re-construct and *re-script* it. The date label moved from being a food policy technology, guaranteeing food quality and safety, to being a "villain" in the fight against food waste (environmental politics). However, all my informants (even from NGO's fighting against food waste) agreed that simply removing the *best before* date would not be the solution as food quality cannot be sacrificed on the altar of sustainability:

> "Quality is a tricky balance. It is an illusion, I think, thinking that consumers would eat food that they do not think is nice. We are such an affluent society that I cannot believe that Norwegian consumers would eat food that they do not experience as good. And if you have a shop that is full of old products, it is another supermarket chain that will survive." (Interview Norgesgruppen, February 2018)

As this quote shows, it is an illusion to think that consumers today would accept poor quality or even insecurity about the age of food products. Today's consumers have high expectations about the food they want to purchase and use (De Hooge et al. 2017). How, then, to solve the *wicked problem* (Rittel and Webber 1973; Närvänen et al. 2020) of sustainable food production and consumption without sacrificing quality? How to reconcile individual consumer needs for food quality and safety with a collective need for more

sustainable food chains? How to translate global goals into local policies that bring about necessary change without sacrificing what has been achieved? The following case study shows how the re-scripting of the date label was an attempt to reconcile these different issues.

Translating UN-Goals into Local Policy

UN Sustainable Development Goal No 12 is that by 2030 the amount of food waste is substantially reduced through prevention, reduction, recycling and reuse and explicitly mentions consumers and the need to educate them towards sustainable consumption and lifestyles (UN, n.d.). However, *how* this should be done is not outlined (Beveridge and Guy 2009: 74) and as the UN lacks executive or coercive powers within nation states, these goals have to be translated into action on a local level, with local actors and local technologies.

Several steps were needed to translate these objectives into practical policies and use. First, the government needed to find allies in the fight against food waste, and an agreement between industry and the state was reached. In June 2017 five ministries (headed by the Ministry for Climate and Environment) and 12 organisations representing food industry and trade signed the *Bransjeavtale om reduksjon av matsvinn* (Trade Agreement about the Reduction of Food Waste) (Government of Norway, 2017). Using voluntary agreements between government and food industry rather than enforcing strict rules to achieve certain policy goals is the norm in Norway as this statement from a researcher from Østfoldforskning[90] shows:

> "This is more the Norwegian way, to have voluntary solutions. One has done the same with the recycling of packaging, called Green Point, which was also a voluntary arrangement." (Interview Østfoldforskning, June 2017)

However, besides being the 'Norwegian way,' it also exemplifies a general shift in politics and policy making (not only in Norway but worldwide). After mandatory and enforced regulations that were the tools of the high-modernist discourse in the 1970s (Bull 1990 [1982]; Stenersen and Libæk 2003; Myrvang, Myklebust, and Brenna 2004) there was a

[90] Østfoldforskning is a national research institute focused on knowledge about sustainable social development.

shift towards voluntary agreements and self-regulation of the market within the neo-liberal system of today (Stenersen and Libæk 2003; Venugopal 2015; Pyysiainen, Halpin, and Guilfoyle 2017; Frohlich 2017). In accordance with UN Goal 12.3., the agreement states that industry and state will work together to reduce food waste by half by 2030. The agreement explicitly maintains that both industry and government shall take action to help consumers wasting less food (Trade Agreement, 2017). The next step, after enrolling the industry into the network for reducing food waste, now consumers had to – once again – be enrolled. But how to reach the consumers and how to help them waste less food?

In my interviews[91] I found that producers and government authorities generally identified the misinterpretation of the two scripts as the main issue that had to be resolved. The date label became the main actor that had to be worked on and its script may not only be the source of the problem but might offer a solution as well. The case study below shows how the UN goals were translated into practices and policies in Norway.

Re-Scripting the Date Label

During the 2017 Nordic Food Waste Conference in in Oslo, Norgesgruppen, Norway's largest food retailer/producer presented a pilot project for testing an additional date on the food label. The head of the sustainability department, explained:

> "It is a pilot project and it is run on a series of yogurt products that we have. The goal is to reduce food waste, not our own food waste but the consumers' food waste. It is also to increase the awareness of what the best before date means. The additional *normalt brukbar til* (normally useable until) indicates how long it normally can be eaten, even if not all the aspects of the quality are still there." (Chief advisor Sustainability Norgesgruppen)

From this statement it becomes clear that – at least in this case - rather than focusing on their own waste production, this company saw the more detailed information of consumers as the main path forward. After this short presentation, a discussion started between people who praised this idea as helping consumers to understand the expiration date and

[91] This is supported by the abovenamed literature on the topic.

those who believed that additional information would confuse them. Here are a few opinions of the day:

> “My first thought is that I'm concerned that it's confusing. This is plan B, this is when we decide that we are not able to educate the consumer about the meaning of the best before date, then we use this. I'm not ready to give up that we can educate the consumer to use their senses.” (Veterinary from Danish Food Administration)

> “I think we should look at this initiative as an “in addition to” not meaning that we should give up educating consumers. With the information so close to the date label, and not on a web site or far away from the purchase moment.” (CEO Matvett, Interest organisation for the reduction of food waste)

> “I think it's very important that when we talk about labelling is that we're aware that labels should be uniform for all kind of products. And it should be easily recognized from different types so that you will always find the same information in the same way. So, you don't make differences between products.” (Norwegian Food Safety and Hygiene Authorities).

These three statements reveal several competing concerns, needs and priorities. The two employees of the food authorities from Norway and Denmark were much more concerned with a uniform, standardized and non-confusing message towards consumers, which furthermore would not make (marketing) differences between products. The CEO of the industry’s interest organisation to reduce food waste (Matvett) understandably had more the waste-reductive powers of a possible new script in mind than uniformity and standards. However, even though no concrete agreement on how to inform the consumers best had been reached that day, it was clear that the strategy of the Norwegian government was working in practice. The food industry was offering a possible solution by presenting the idea during an international conference, new actors could be enrolled (even though not all

agreeing with the strategy – yet) and new coalitions became possible. The date label had "officially" been identified as the technology that could bring about change and its *best before* script became the tool to be worked on. In order to make explicit to consumers what the *best before* script meant (possibly reduced quality but most likely edible) and how it should be used (do not throw away but check it) a new *script* was in the making.

However, Norgesgruppen were not the only ones working on re-scripting the date label. While they were busy testing and surveying their pilot[92], another food producing company, Q-Meieriene (Q-Dairy), had their own approach. Q-Meieriene surprised the industry and the authorities with their own supplementary date label: *best før (dato) men ikke dårlig etter* (best before (date) but not bad after). According to the CEO of Q-Meieriene they had responded to a challenge put in front of them by an activist and blogger (*Spis opp maten* or Finish your food) (with approximately 30,000 Facebook followers). In March 2016, on national channel TV2, this activist challenged food producers to address the fact that date labels contribute to unnecessary consumer waste. According to her, Q-Meieriene was the only company responding, and they agreed to add her suggested *but not bad after* to the original date label. Here we can see the engagement of yet another group of actors – besides government, industry and interest organisations also activists became involved in the process of re-scripting the words and *re-scripting* the use of the date label. While new actors emerged, some previous actors (Consumer Agency) were absent from the scene and others (government and political parties) acquired new, less prominent roles as the following will demonstrate. In the first half of 2017 two different supplementary date labels were in use.[93] This alarmed the Norwegian Food and Hygiene Authorities, Mattilsynet, who feared that differing scripts would lead to confusion rather than clarification among consumers. One of their employees explained the legal backdrop: "The Food Information Regulation says that if you provide voluntary information, this information should not be misleading, it should not be ambiguous and should not confuse" (Interview with senior advisor Mattilsynet, February 2018).

[92] Their approach of adding another date onto the label did not prove to be practical in the end. The possible danger of consumers confusing the two dates in addition to the danger of the dates being confused in the printing process led to the abolition of this approach. Furthermore, Norgesgruppen agreed that there should be a uniform wording for date labels in Norway.

[93] One by Norgesgruppen and one by Q-Meieriene and later TINE AS.

To reach an agreement within the industry two meetings were held. In November 2017 Mattilsynet explained their viewpoint and the legal requirements of any supplementary date labelling. After giving a presentation about the legal requirements, Mattilsynet left the scene to the guidance and coordination of Matvett, an interest organisation owned by the Norwegian food industry, aimed at the reduction of food waste. In order to reach a consensus, Matvett called for another meeting at the beginning of 2018, where several important actors from the food industry (including Norgesgruppen, TINE and Q-Meieriene) agreed on one, uniform, voluntary supplementary date label. During this meeting they decided that the new script would be *best before (date), often good after*. One of the reasons for deviating from the already existing but *not bad after* was that meat producers could not guarantee 100% safety after the *best before date*. This meant that TINE AS, the example from the beginning of the article, had to change the supplementary date label from *not bad after*, which they had already started using, to *often good after* even though consumers had voted otherwise. Against consensus within the industry, Q-meieriene decided to keep *not bad after*.[94] The reason to do so was not only that their supplementary label had already been established and was widespread, but they also considered this a stronger message.

I discovered the same assumptions when reviewing the aforementioned TINE Facebook poll. Besides voting for their favourite wording many left positive comments. There were however several critical voices, accusing TINE of being a copycat from Q-meieriene. This shows that these consumers interpreted the supplementary sentence as a creative, fun marketing strategy that had been copied by TINE, rather than a coordinated campaign for consumer information for which a single and unified wording would be necessary. This interpretation also opens questions about the underlying objectives within the food industry besides helping consumers to better understand the date label. This quote taken from an interview with Norgesgruppen shows that the underlying goals were two-fold:

[94] Being asked about their preference only 15% of the respondents of the survey preferred “not bad after”. The reason for this many stated was that “bad” sound too negative.

> "The environmental plans were primarily about our own operations, but in the field of food waste we saw that we were dependent on cooperation in the food chain to solve some of the challenges. After working on the theme for many years, it has also been natural to take action towards the consumer and there is probably a certain reputation effect that is part of the motivation." (Chief adviser sustainability, Norgesgruppen, February 2018)

This quote shows, first, a commitment to a more sustainable production but, second, an ambition to boost Norgesgruppen's reputation as a green, sustainable and consumer friendly company in the eye of the consumer-citizen (Neilson and Paxton 2010). It is easier to change words on a label than essentials within production and consumption. The question is now, will the supplementary date label have the desired effect of successfully translating Sustainable Development Goals through changed user practice?

A Process - Not a Result (Yet)

As stated before, translation is a process before it becomes a result (Callon 1986). The Norwegian approach of changing the script of the date label has not stabilized yet. Many actors were enrolled in the process: the Norwegian government and food authorities, large parts of the food production and retail industry, interest organisations and activists. The newly adapted date label is settling into the food market. By the end of 2019 several products were labelled with the supplementary label (mainly dairy products but also eggs, orange juice, flour, and flat bread) and one of the main supermarket chains stated that they would label all their products with the supplementary label.[95] Sweden announced that it will follow the example of its neighbour (SVT Nyheter, 2018) and there has been international media attention for the 'Norwegian way' of re-scripting the date label in order to address household waste.[96]

[95] https://www.rema.no/artikler/nyheter/vi-merker-alle-egne-varer-med-ofte-god-etter/

[96] Documentary on Spiegel TV: Teller statt Tonne, 3rd of March 2018. https://www.zdf.de/gesellschaft/plan-b/plan-b-teller-statt-tonne-100.html; Norway's Top Dairy Introduces 'Best Before, but Not Bad After' Label to Fight Food Waste, 9th of January 2018: https://www.dairyreporter.com/Article/2018/01/09/TINE-changes-label-after-Facebook-campaign-to-Best-before-but-not-bad-after; Norway's Top Dairy Introduces 'Best Before, but Not Bad After' Label to Fight Food Waste, 10th of January 2018: https://www.thedailymeal.com/drink/norway-introduces-best-by-not-bad-after-label

However, there are still two competing supplementary date labels, which could lead to further consumer confusion and irritation within the industry. Some of the actors I spoke to are still reluctant to implement the new script for several reasons. There was discussion within the industry around how much money and effort should go into redesigning existing labels to accommodate the new phrase. For one smaller dairy company for example the costs were not (yet) worth the (uncertain) results. They also claimed that the two parts of the phrase mean the same:

> "Can we not rather look at what best before really means? This supplementary text actually says exactly the same that best before stands for." (Interview Rørosmeieriet, March2018).

Furthermore, while the interest organisation for waste reduction within the industry, Matvett, is promoting the supplementary date label (Matvett, n.d.), the Consumer Agency was less enthusiastic. They had neither been actively involved (something they did not approve of) nor were they convinced that consumers should be the main focus in the food waste discussion: "producers should not delegate their responsibility towards consumers but look at their own waste as well." They were also concerned that what consumers really need is the longest possible shelf-life, not "just" changes in the script (Interview with Forbrukerrådet, September, 2018).

The question remains how much the change in the script will influence the use of the date label. At the moment of writing it is not possible to quantify the influence of the addition of *often good after* to the original *best before* on consumer waste behaviour and household waste directly (by consumers reading and adhering to the phrase) and indirectly (due to media raising public awareness of the waste problem). The latest report on food waste in Norway is from 2018 and therefore does not contain data about the change in wording (Elstad Stensgård et al. 2018).

When asked about their thoughts about the supplementary date labelling many respondents from the survey answered positively. Here some representative quotes:

> "I think the new labelling is positive, it makes us more aware that date labelling is not crucial to the use of the product. The new date labelling has started discussion about food waste."

> "It is good that they now use *often good after*. You are a little more confident that it is possible to eat food after the expiry date. Especially since I live with a person who is very picky about food when it comes to the expiration date."

> "Good! I feel safer to eat a product after the date."

Others were less enthusiastic and experienced the supplementary sentence as "tautological as *good after* is the same as *best before*" or "confusing". A few respondents even saw the whole change as a marketing campaign: "It is all about marketing and competition to get their product sold. The products have the same durability as before," while others were positive but admitted this would not change their buying habits.

When looking at the numbers in the survey one gets even more confused: 77% of the respondents answered that the new script explains the meaning of the date label better and 64% admitted they felt safer to use out-of-date products due to the supplementary date label. However, at the same time 67% of the same respondents answered that they do not need the addition as they *do* understand the original *best before* well enough. Many explained in the open questions that even though they thought it was a good idea and might be important for others for themselves it was not necessary as they knew the right use of the best before label already before.[97] This is of course quite a paradox which shows that the process has not settled and that not all necessary actors have been equally successful enrolled in the network yet. In order to be effective, the addition to the date label has to be translated into action, made real and its recommendation has to become as entrenched into the minds of consumers as the first part of the sentence is.

[97] This understanding of the date label could stem from the fact that people who are more interested in the topic and therefore already better informed are generally more likely to fill in surveys that those who are not.

Making Sense of the Process

By combining the two concepts of *translation* and *script* this case study has shed light on how global issues and goals can be put into action and practice. The UN Sustainable Development Goals were translated into use by enrolling different actors into the network and by activating the persuasiveness of the date label. The outcome of the *translation* process was an addition to the script, which performed the function of a *script.*

Following the date label through time reveals the changes and shifts that happened between the construction of the original date label in the 1960s/70s and its re-scripting today. The date label has moved out of the exclusive realm of food policy and into the domain of environmental politics. The misinterpretation of the *best before* script led to great amounts of avoidable food waste - a problem that had been identified by scientist, media, activists, and by (supra) national governing bodies. However, the same actors realized that abandoning the *best before* date altogether would sacrifice the individual need for food quality and security. The challenge was how do reduce household food waste without reducing the need for consumer information and food quality. Looking at both, the scripting and re-scripting of the date label, it is possible to identify processes of translating issues and goals into practical politics and daily use through the enrolment of different actors and the employment of technologies for governing. This is a messy process with changing actors, approaches and goals.

In the 1960s/70s the Consumer Agency together with Labour Party promoted the issue of food quality and consumer education against the competing needs of the food industry and several conservative parties. Today the government and even the food authorities acted rather from the side lines, leaving the initiative to the food industry, its interest organization and individual consumer activists. This shift in agency marks a change from a high-modernist (change through state rules and regulations) to a neo-liberal economic-political agenda promoting not only "a withdrawal of the state from market regulation, but the establishment of market-friendly mechanisms and incentives to organize a wide range of economic, social and political activity" (Venugopal 2015: 172). The new assemblages of human actors around the date label, the shift in taking action from government to industry and the transfer of responsibility from the collective to the individual that are visible in the re-scripting of the date label exemplify this change.

However, not only the actors changed but also the way in which issues were translated into practice. Instead of using binding legal regulations like in the 1970s, today's addition is done on a voluntary basis and although the original date label could and did not enforce compliance from all consumers (e.g., dumpster divers) the *often good after* leaves even more room for consumer interpretation as it is not absolute but relative to individual food items. The neo-liberal individualization manifests itself in shifting responsibility for taking the "right" decisions, moving the food products economically and sustainably away from not only the government and its agents but also from producers and towards the consumer.

Here I want to add some critical notes about this change. First, it is of course easier to change words than people´s behaviour. Or rather, changing a script is easier than making the new script effective. As not only the statements about the continuing necessity of consumer education during the Nordic Food Waste Conference but also some of the quotes from the survey show, changing words might remind people to use their senses but may not really change consumer attitudes and practices. This has possibly to be done on a different level than on the label, starting at a young age, instilling trust in the senses again rather than in government and industry standards. This will take a more concerted (and possibly more expensive) effort from the government and authorities working with food, consumers and education – not only on a national but also an international level. Second, while this approach shifts responsibility – yet again (Evans 2011) – away from the industry towards the consumer, who is expected to make environmental responsible choices; the constant availability of cheap food, large packages, 3-for-2 offers and a market of ever fresher, more short-lived and constantly changing products, flavours and food fashions lie deeper at the heart of the problem than the wording of the date label. Third, and connected to the two criticisms above, even producers admitted that the change in words was not only done for pure environmental but economic reasons as well. Changing words to make products *look* environmentally responsible is after all easier than changing production, retail strategies and marketing in essentials.

It is not easy to predict how the addition to the date label will help reducing household food waste. The process of translation is not settled yet. Many actors are still reluctant, others have competing ideas or feel that they were left out. Furthermore, there are still two different supplementary scripts in use and far from all products bear the new

label. The supplementary date label tries to balance two competing needs and issues. One the one hand it has to make sure food is safe and fresh enough to eat, on the other it adds a level of concern, a reminder about the senses and ultimately about its own fallacy. This article set out to present several issues surrounding the date label, making sense of its (re-)construction and inherent script and to unravel the processes of translation of goals into practice the date label (is hoped to) brings about. Only time will tell whether the messy process of re-scripting will lead to a better understanding and use of the "little date on the package."[98]

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[98] Here I am borrowing from Ritzer's "little house on the hillside" terminology (Ritzer 2000)

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10. Appendix

«Det lille merket på pakken»[99] - Historien om datomerking i Norge

«Norske forbrukere har datoskrekk» er et uttrykk som man ikke bare finner i norske aviser, men det blir også jevnlig påpekt av de som arbeider i næringsmiddelindustrien.[100] «Datoskrekken» har nemlig alvorlige konsekvenser. Ifølge rapporter ble det kastet hele 385 000 tonn mat verdt 21,9 milliarder kroner her i Norge i 2017. Private husholdninger sto for 58 prosent av svinnet. Gjennomsnittlig kaster hver person 42,6 kilo spiselig mat hvert år. [101] Mange av disse produktene har gatt ut på dato, men kunne spises fremdeles. Det er forsket mye på hvorfor forbrukere stoler på datomerkingen mer enn på sine egne sanser.[102] Imidlertid tar mange av disse studiene datomerkingen som gitt, i stedet for å se på hvordan den har blitt konstruert historisk.

I dag finner vi datomerkingen overalt. Når vi handler dagligvarer eller når vi ser igjennom spiskammeret vårt, møter vi datomerking. Datomerkingen har opplagte gevinster – den gjør oss i stand til å handle og senere spise matvarer, uten å være nødt til å ta mange daglige avgjørelser enten det handler om hygiene, sikkerhet, eller moralske spørsmål. Disse trivielle, men noen ganger også livsviktige beslutningene har blitt delegert fra sansene våre til en standardisert teknologi. Datomerking har ikke bare effektivisert hverdagen til folk flest, den har også forandret måten produkter blir designet, produsert, solgt, konsumert og kastet. Datomerkinger påvirker ikke bare våre foodways, den måten som vi tenke på mat (spiselig eller søppel), men også hvordan matproduksjon og forbruk er praktisert (food chains). Hele moderne matkjeden har blitt svært avhengige av «den lille datoen på pakken». I løpet av de førtifem årene de har eksistert, har datomerkingen blitt et meget vellykket

[99] Basert på Ritzer's ide om «the little house on the hill" (Ritzer, *The McDonaldization of Society*).

[100] https://www.adressa.no/nyheter/okonomi/2018/04/18/N%C3%A5-blir-det-mulig-%C3%A5-kj%C3%B8pe-mat-som-er-g%C3%A5tt-ut-p%C3%A5-dato-16504214.ece?cx_Deling=AddThis

[101] Elstad Stensgård et al, Matsvinn i Norge. https://www.matvett.no/aktuelt (02.10.2019)

[102] Aschemann-Witzel et al, 'Consumer Related Food Waste: Causes and Potential for Action'; Mattila et al, 'Dances with potential food waste: Organising temporality in food waste reduction practices'; Stilling Bilchfeldt et al, 'When it Stops being Food'; Wilsonet al; 'Seeing is not believing: perceptions of date label over food and attributes'.

mellomledd mellom «jord og bord» (field and fork)[103], som overfører informasjon om matkvalitet og matsikkerhet fra produsent til forbruker ved å forandre den naturlige levetiden av mat til en standardisert holdbarhetstid. Hvorfor og hvordan har dette skjedd?
Er det ikke paradoksalt at folk heller stoler på denne megleren, enn seg selv og sine egne sanser? I dag virker det ofte som om forbindelsen mellom datomerkingen og matavfall er gitt, nesten naturlig – men dette er ikke nødvendigvis sann. For å finne måter å redusere matsvinn på grunn av datomerking må vi først finne ut hvordan «dette lille merket på pakken» fikk en så viktig rolle i det industrialiserte matsystemet. «Betydninger er ikke innprentet i ting av natur; de er utviklet og påtvunget av mennesker»[104] og endringer og nye teknologier kommer ikke av seg selv, men er et resultat av en innsats av diverse aktører som for eksempel myndigheter, eksperter, produsenter, forbrukere osv. Derfor er spørsmålet, hvorfor ha vi en datomerking og hvordan ha den blitt konstruert av forskjellige aktører? Forfattere som Miller og Rose[105] hevder at statens styring ikke bare er basert på store ordninger, men også på dagligdagse, tilsynelatende «lille» mekanismer - for eksempel teknologier for standardisering og merking. Derfor, når vi ser på politikk som en samling av «styringsteknologier» som oversetter politiske tanker til dagliglivet, kan vi identifisere «hvordan vanlige objekter og teknologier er laget for å tale for politikk».[106] Politikk er ikke bare sosial, kulturell eller økonomisk, den er også materiell og teknologisk. Samtidig går politiske, sosiale, kulturelle og økonomiske aspekter inn i teknologien. Endringer i norsk matindustri og spisevaner etter andre verdenskrig skapte et «behov» blant forbrukerne. Politikerne som kjørte konstruksjonen av den «lille datoen på pakken» hadde visse ideer og mål som deretter bokstavelig talt ble innskrevet på matpakkene, og foreskrev en viss bruk og praksis basert på disse ideene og målene.[107] Imidlertid var denne prosessen av den konstruksjon av datomerkingen som en styringsteknologi og megler mellom jord og bord, som standardiserte den naturlige levetid til holdbarhetstid verken enkel eller uten motstand som jeg skal vise i denne kapittel.

[103] Sassatelli og Scott, "Novel food, new markets and trust regimes: Responses to the erosion of consumers' confidence in Austria, Italy and the UK"; Poulain, "The Sociology of Food. Eating and the Place of Food in Society"; Zachmann og Østby, "Food, Technology, and Trust: An Introduction".
[104] Wolf, *Europe and the People without History*.
[105] Miller and Rose, *Governing the Present*.
[106] Woolgar and Neyland, *Mundane Governance*.
[107] Akrich, "The De-Scription of Technical Objects"

Det juridiske grunnlaget

> *[…] kraftigere og mere localiseret Bestyrelse...under herskende større epidemier, derpaa afgive de, hver Gang den ondarterde Cholera har hjemsøgt Riget, udgivne provisoriske Anordninger angaaende Foranstaltninger imod denne Sygdom.* [108]

> *[…] industrien og spesielt den kjemiske industri efter den raske utvikling den har gjennomgått I den senere til, for en vesentlig del har overtatt tilberedning av sammensatte og konservering av usammensatte næringsmidler. Videre […] har under den voksende konkurranse forfalskning av næringsmidler tatt fart.*[109]

Forskriften om merking av forbruksvarer fra 1975 som regulerte en almene datomerking for den første gang for helt Norge, var basert på *Lov om merking av forbruksvarer* fra den 24 mai 1968. Det fantes lovmessige forgjengere som loven og forskriftene ble bygd på. Mot slutten av 1800-tallet ble det utviklet vitenskapelig kunnskap vedrørende sammenhengen mellom mikrober og matbårne sykdommer. Urban mat- og vannhygiene ble et statlig ansvarsfelt som måtte løses for å heve den gjennomgående helsetilstanden i befolkningen.[110] Fra 1860 påla *Sundhetsloven* lokale myndigheter å opprette lokale *Sundhetscommissioner* som skulle engasjere seg i forebyggende helsearbeid, for eksempel forhindre salg og bruk av skadelige næringsmidler.[111]

Denne loven var et «viktig fundament for den medisinske lovgivningen i Norge frem til i dag».[112] Selv om det ikke finnes noen direkte referanse til datomerkingen i denne loven, er det åpenbart at en forståelse om at hvis man ønsket å beskytte mennesker fra matrelaterte sykdommer, så måtte myndighetene sikre at den maten folk spiste var trygg. Epidemier (matrelaterte og andre) var en utfordring for befolkningshelsen og de sanitære forhold. Da de hygieniske forholdene i byene ble bedre, avtok farene for epidemier. I mellomkrigstiden ble tilliten til vitenskap og samfunnets evne til handling konsolidert:

[108] Ot. Prp nr 34/1860 s 2
[109] Ot.prp. nr 51/1932 s.1
[110] Latour, *The Pasteurization of France*. Elvbakken og Rykkja, "Norsk matkontroll - konflikter om kontrollhensyn og verdier"; Atkins, *Liquid Materialities*.
[111] Sunnhetsloven § 3
[112] Mortensen, *Næringsmiddellovgivningen i Norge*, 10

«sosial renovasjon» og «sosialingeniørkunst» var de politiske ideologiene på 1930 – tallet. Ideologien var også preget av sterk «teknokratisk optimisme»[113]: vitenskap og teknologi kunne løse de fleste problem menneskene sto ovenfor – samfunnet kunne formes til å gagn alle.[114] For matsektoren manifesterte disse ideene i *Lov om tilsyn med næringsmidler* o.a. (Næringsmiddelloven) fra mai måned, 1933.[115] De største bekymringene av myndigheter var «moral og økonomi» som for eksempel «uredelig eller uærlig handel med nærings- og nytelsesmidler» (§1).

Fram til midten av 1800-tallet hadde det vært *caveat emptor* (kjøper pass på) men etterpå kom en skifte i denne tanken og ansvar på et produkt fra forbruker til produsent.[116] Dermed var der også behov til en lovgiving omtrent «moral og økonomi». Denne loven fra 1933 ble ikke i det vesentlige endret før i 1983 og framsto som malen for mange reguleringer i forhold til mat i årene som fulgte. Det som var viktig for utviklingen av datomerkingen er *Alminnelige forskrifter om tilvirkning og omsetning av næringsmidler* m.v. 3 mai 1935. Denne reguleringen ble implementert med det for tanke «å forebygge helseskade fra næringsmidler og sikre hygieniske forhold omkring omsetning og tilvirking». Reguleringen omfattet instruksjoner om konserveringsmidler, produksjonssted og utstyr, men også om merking og hygiene. Denne reguleringen spesifiserte Næringsmiddellovens krav til «å forebygge uriktige forestillinger om varenes opprinnelse, beskaffenhet, art, mengde, sammensetning, eller andre forhold som har betydning for folkehelsen» (Næringsmiddelloven, §2). Deretter var det regler om datomerking, men disse var ennå ikke generelle eller omfattende og vedrørte bare den «siste forbruksdag» av svært forgjengelig mat. Kvalitet endret av produktets aldrer var ennå ikke et juridisk tema. Her skiller den norske saken seg fra for eksempel den britiske, der lover om matkvalitet kom før lover om mattrygghet.[117] Før at datomerking i forhold til matkvalitet kom til å være en forbrukers behov og dermed politisk tema var en forandring i det norske matvaner (foodways), i den norske matproduksjonen (food chains) og i forbrukerbevisstheten nødvendig.

[113]Myrvang et al, *Temmet eller uhemmet*.
[114] For generell informasjon om norsk historie se Aschehougs Norges Historie, 1998. Grunnbok i Norges Historie, 2013. Edvard Bull, Norges Historien etter 1945, 1990 (1982).
[115] Innført juli 1935.
[116] Atkins, *Liquid Materialities*.
[117] Milne, "Arbiters of waste: date labels, the consumer and knowing good, safe food".

Endringer av norske matvaner

> *Industrien overtar stadig mer av arbeidet i kjøkkenet. I fryseboksene og kjølediskene hos kjøpmannen finner vi ikke bare frossenfisk og ost og smør – vi kan faktisk plukke med oss i små og store porsjonspakninger alle ingrediensene til en ferdig middag (…).Vi nøler gjerne litt foran hver ny og ukjent vare, og mange lengter kanskje tilbake til gamle dagers kolonialbutikk, der vi daglig kunne konferere med innehaveren om prisen på osten og smaken på pølsa (...) Imidlertid er vi klare over at kvaliteten på disse ferdigpakkede matvarene svært ofte er avhengig hvor lang tid det er gått siden pakkingen fordi de ikke er hermetisert eller sterilisert.*[118]

Dette sitatet fra Forbrukerrapporten illustrerer på en god måte hvordan de norske matvaner og det norske matsystemet har endret seg fra andre verdenskrig og fremover. Staten hadde det overordnede ansvaret for den sosiale og til og med økonomiske utviklingen i landet. I samarbeid med næringsliv bygget staten basis til industrialisering, økonomisk vekst, økende levestandard, omfordeling av formue, reduksjon av arbeidsledighet og sosial stabilitet. Denne tilnærmingen var innebygd i ideer om statens rolle i å styrke borgerens velferd og levestandard (felles beste) og muligheten for å strømlinjeforme markedet for å unngå friksjon mellom produksjon og forbruk.[119] Etter krigen var det en akutt mangel av mat, og mange produkter ble rasjonert. Dette ikke bare på grunn av krigstidens nødvendighet, men også som en aktiv måte å redusere privat forbruk og å støtte import av varer for offentlig velvære og industrialisering og modernisering av landet, ved å importere skip og maskiner i stedet for bananer og biler.

De fleste rasjoneringene ble opphevet mellom 1949 og 1952.[120] Dette, sammen med slutten på mange importrestriksjoner og norske reguleringer fra 1930 og 1940-tallet førte til større og bedre tilgjengelighet av matvarer.[121] Nye og spennende, men ukjente produkter ble introdusert i det norske markedet, og frukt og grønnsaker ble nå tilgjengelig

[118] Forbrukerrapporten februar 1967: *Datomerking er påbudt for en rekke sorter matvarer.*
[119] Stenersen og Libæk, A History of Norway: From the Ice Age to the Age of Petroleum.
[120] Notaker, *Ganens Makt.*
[121] Notaker, *Ganens Makt. Myrvang et al, Temmet eller uhemmet*

utenom den korte, norske sesongen.[122] Folk som tidligere hadde vært vant til lokale, sesongavhengige produkter ble nå konfrontert med matvarer som de hadde problemer med å identifisere, bedømme og bruke på en korrekt måte.[123]

Norge ble videre medlem i internasjonale (handels) organisasjoner som OEEC (OECD siden 1960) og EFTA i løpet av 1960-tallet og mange forskrifter, som reduserte handelen mellom Norge og andre land, ble opphevet. En av disse forskriftene som ble opphevet, handlet om at bedriftene ikke fikk lov til å operere i flere ulike markedsgrener. Dette førte til en gryende suksess for supermarkeder som erstattet de små og spesialiserte butikkene. I 1945 ble fortsatt salg «gjort over disken» og i 1952 var det bare 129 selvbetjeningsbutikker – men tallene økte jevnt og i 1975 så ble 90 prosent av all mathandel foretatt i supermarkeder.[124] «[...] supermarkedenes revolusjon med åpenbare paralleller i hele den vestlige verden har radikalt forandret hverdagen for både matprodusenter og forbrukere».[125] Forbrukerne kunne ikke lengre få råd fra pålitelige butikkinnehavere, men måtte finne sin egen vei langs upersonlige rader i supermarkedet.[126]

Der hvor den lokale kjøpmannen tidligere hadde solgt lokale produkter som var kjent og synlige på disken, førte den pågående industrialiseringen og globalisering av matproduksjon til en fremmedgjøring av produktene som forbrukerne brukte. Norske forbrukere ble i stadig større grad konfrontert med ikke bare nye produkter fra fjerne steder, men også nye produktformer. Disse hadde ofte fremmed utseender, ukjente emballasje og nye metoder for konservering. På grunn av denne «industrialiseringen, standardiseringen og globaliseringen var produktene selv blitt distansert og «usynlig».[127] Et eksempel på produktenes endringer gjelder frysing av mat: Mens private frysere var en sjeldenhet på 1950-tallet, så hadde 37 prosent en fryser i 1967 og antallet økte til over 70 prosent på 70-tallet.[128] På den ene siden så førte de nye konserveringsmetodene til at livet ble enklere for husholderskene, men på den andre siden så fjernet disse metodene også muligheten til å bedømme kvaliteten og ferskheten både ved innkjøp i supermarkedet og

[122] Lange, *Samling om felles mål, 1935-70.*
[123] Intervju med Matvett AS, Oslo, juli 2016. Dette sitatet dekker flere lignende intervjuer samlet for denne artikkelen.
[124] Bull, *Norges historien etter 1945.*
[125] Olsen, *Norsk mat etter supermarkedsrevolusjonen, 8.*
[126] Forbrukerrapporten juli 1971: *Dagligvarehandelen og forbrukerne*.
[127] Finstad, "Familiarizing food: frozen food chains, technology, and consumer trust, Norway 1940-1970".
[128] Finstad, "Familiarizing food: frozen food chains, technology, and consumer trust, Norway 1940-1970", 37.

senere når man skulle bruke produktene ved kjøkkenbenken. I et skiftende matlandskap ble avstanden «jord/fjord og bord» større, ikke bare geografisk men også når det kom til andre aspekter (importerte, bearbeidede, konserverte og pakkede upersonlige produkter som ble solgt i supermarkeder) til at forbrukerne kunne ta veloverveide beslutninger om sikkerheten og kvaliteten på maten. Ekspertise fikk forrang fremfor erfaring, målinger tok over for «subjektiv» mening og samhandling.[129] Mat er flyktig og forgjengelig og det kvaliteten - til og med spisbarheten – over tid. For å bedømme pakket mat, at man ikke kan røre eller lukte før man kjøper, var det behov for en standardisert holdbarhet som forteller forbrukeren om han får god kvalitet. Fordi på den samme tid kom kravet om kvalitet for pengene tydeligere frem og forbrukerne fant en ny selvbevissthet som førte til innføringen av nye lover for merking og regulering.

Husmødre, forbrukere(organisasjoner) og politikere

> *Hvem er forbrukeren? Forbrukerne er jo mangt. Mye og mangt. Den jevne forbrukeren spiste det de fikk kjøpt, sånn sett. Så det var ikke noe stort krav på holdbarhetsmerkingen. For det var ikke noe marsjer.* [130]

> *Vi som er husmødre og som arbeider blant husmødre, vet hvilke tusenkunstnere de må være for å få pengene til å strekke til. Derfor må husmødrene fremfor alt sikres kvalitetsvarer for de pengene som de gir ut, enten det gjelder mat eller klær. (…) Vi håper at denne viktige sak vil møte den forståelse den har krav på, både fra våre myndigheter, fra våre produsenter og fra våre konsumenter.*[131]

Etter andre verdenskrig skjedde det ikke bare store endringer i produksjonen og salget av mat, perioden ble også preget av forandringer i forbruk og i forbrukernes roller. Tiden rundt 1960 utgjør derfor «et vannskille i forbrukernes roller»[132] med en stadig økende grad av forbrukerrettigheter. Først og fremst økte forbruk og konsum selv. I Norge som ennå var et

[129] Porter, *Trust in Numbers.*
[130] Intervju med Mattilsynet, oktober 2017
[131] VG, 1951
[132] Myrvang, *Forbruksagentene, 22.*

relativt fattig land ble det private konsumet nesten tredoblet på 1950 og 1960-tallet. Dette skjedde samtidig med at kostnadene for de mest vanlige varene sett i sammenheng med den gjennomsnittlige families budsjett sank jevnt: fra to tredjedeler av husholdningsbudsjettet i 1947, til 35-40 prosent på 1960-tallet sekstitallet og litt over 10 prosent i dag.[133] Kvinnene, husmødrene som VG nevnte i sin artikkel, ble drivkraften bak den nye konsumkulturen som utviklet seg: «Kvinner med hjerte og hjerne for husstell var viktige aktører i det å artikulere nye behov og implementere nye vaner i hjemmet generelt, og på kjøkken spesielt».[134]

Fra 1950-tallet betydde etableringen av Forbrukerrådet i 1953[135] og Departementet for familie og forbrukssaker i 1956[136] at forbrukernes stemmer ble styrket. Det generelle målet for forbrukerrådet var ikke bare å ta seg av forbrukerinteresser og rådgivning til statlige aktører, men det ble også drevet et kontinuerlig arbeid med forskning, forbrukerinformasjon og forbedring av produktstandarder og merking av produkter. For å oppnå sistnevnte ble Hovedkomiteen for varedeklarasjoner og kvalitetsmerking (Varefaktakomiteen) samtidig etablert. Den første perioden var ikke enkel for denne typen institusjoner. Både departementet og rådet ble nærmest latterliggjort som «foreninger for husmødre»[137] og den riksdekkende avisen VG kalte endog Forbrukerdepartementet som «det mest overflødige av alle departementer».[138] Samtidig var kvaliteten og kvalitetsforventinger av mange matprodukter fremdeles lav:

> *[…] jeg har snakket med en eldre inspektør i Mattilsynet, ikke sant, og hun sa at liksom i riktig gamle dager så var jo det et problem, for eksempel kjøtt, de solgte sure produkter, altså produkter som ikke burde vært solgt […]. Sånn at som en forbrukerbeskyttelse så er det et veldig godt tiltak […] at man som forbruker ikke må betale mye penger for et produkt som er dårlig, ikke sant».* [139]

[133] Lange, *Samling om felles mål, 1935-70*. Eriksen, "Oppvasken".
[134] Myrvang, Forbruksagentene, 155.
[135] https://www.forbrukerradet.no/
[136] http://www.nsd.uib.no/polsys/data/forvaltning/enhet/15000
[137] Intervju med Mattilsynet, oktober 2017
[138] VG, 5 januar 1965
[139] Intervju med Mattilsynet, Oslo, juli 2016

For å endre dette og for å skape bevissthet om forbrukernes behov og rettigheter startet Forbrukerrådet et eget tidsskrift i 1958. Det hadde som målsetning å støtte, informere og «utdanne» forbrukerne. Bladet fikk et bredt nedslagsfelt siden det ble lest i svært mange husholdninger. I 1965 hadde tidsskriftet hele 145 000 abonnenter. Artiklene i magasinet hadde overskrifter som «Dyktige forbrukere – en vei til høyere levestandard» (mai 1958), «Tenk før du handler» (desember 1958) og «Prisbevisste forbrukere – et nødvendig ledd i priskonkurransen» (mai 1958). Forbrukerne ble rådet til å bruke pengene sine bevisst og forsiktig, og til å være klar over rettighetene sine.

Det vi ser her er et generelt skifte i holdningen til kvaliteten på produktene i butikken og endringer i forbrukernes behov. Videre grodde det fram en voksende bevissthet når det gjaldt forbrukerrettigheter. Husmødrene var nå blitt forbrukere; departementer og organisasjoner beskyttet rettighetene deres. Selv om forbrukerne ikke «marsjerte» for å bli opplyst om holdbarhet og kvalitet på matprodukter, så ble politikerne stadig mer bevisst om forbrukernes behov og interessert i temaet. Ifølge Guri Johannessen, (Arbeiderpartiet), leder for Sosialkomiteen, og «jordmor» for *Lov om merking av forbruksvarer,* hadde forbrukere rett til å fa alle nødvendige informasjoner om varer og at forbrukernes interesser må være sentralt i nye lover og regler.[140]

Som jeg skal vise i den neste delen av kapittel var det ironisk nok imidlertid ikke Arbeiderpartiregjeringen som hadde kjempet frem loven siden femtitallet som skulle legge den frem. Det ble den borgerlige samlingsregjeringen som la fram loven som ble grunnlaget for datomerkingen slik vi kjenner den i dag.[141] Derfor så loven annerledes ut som opprinnelig tenkt på. Det var fremdeles en lange vei til at forbrukerne fikk mer informasjon om kvalitet av matprodukter og en «megler» mellom jord og bord.

Datomerkingens juridiske vei

> *For det annet at forbrukerne stort sett er amatører når det gjelder å bedømme kvaliteter, og at de har krav på beskyttelse og veiledning for å sikre at konkurransen*

[140] Informasjon fra Guri Johannessen during the 112. Ordentlige Stortingsforhandlingen i Odelstinget, 3rd mai1968.

[141] Per Bortens regjering av Senterpartiet (Sp), Høyre (H), Venstre (V) og Kristelig Folkeparti (KrF); 12. oktober 1965 til 17. mars 1971

mellom produsenter og handlende resulterer i en viss sammenheng mellom pris og kvalitet, og at en ikke benytter seg av forbrukernes uvidenhet. [142]

Dette OEEC-dokumentet beskriver på en god måte den situasjonen som forbrukere befant seg i rundt 1960. Produktinformasjon var nøkkelen til forbrukerens valgmuligheter og trygghet. «Merking er en mekanisme for å fremme politiske mål og/ eller å adressere spesifikke forbrukerinteresser og bekymringer»[143]. Produktmerking gir ikke bare den nødvendige kunnskap for å foreta valg, men de kan også øke forbrukernes tillit.[144] Datomerking fungerer således som en «kunnskapsformidler», «en megler» mellom produsent og forbruker, som informerer forbrukeren om kvaliteten på ukjente og «skjulte» produkter. Det var ikke bare forbrukerbehov som lå til grunn for datomerking, viktig var også behov av markedet for standardiserte produkter og internasjonale avtaler. Et av disse var den Codex Alimentarius fra 1963 som sier at

Internasjonale matstandarder, retningslinjer og regler for god praksis bidrar til sikkerhet, kvalitet og rettferdighet i den internasjonale mathandelen. Forbrukerne kan stole på tryggheten og kvaliteten av matvarene de kjøper, og importører kan stole på at maten de bestilte vil være i samsvar med forventet spesifikasjonene.[145]

Codexkommisjonen utviklet internasjonale matstandarder som må godkjennes individuelt av hver enkelt stat (før de blir en lov) for å beskytte forbrukerne mot helserisiko og å harmonisere standarder for å lette internasjonal handel.[146] Med en stadig voksende integrasjon av den norske internasjonal handelen i avtaler or organisasjoner som Codex Alimentarius, FT og OECD så møtte myndighetene ikke bare krav om regulering av norsk mat, men også utfordringer fra det internasjonale markedet.

[142] «Productivity in the Distributive Trade in Europe. Wholesale and Retail Aspects" (published by OEEC, Paris 1954)
[143] Einsiedel, "GM Food Labeling. The interplay of Information, Social Values and Institutional Trust", 210.
[144] Einsiedel, "GM Food Labeling. The interplay of Information, Social Values and Institutional Trust", 216.
[145] http://www.fao.org/fao-who-codexalimentarius/about-codex/en/ – 25th September 2017
[146] Stortinget godkjente enstemmig å være en del av Codex Alimentarius-avtalene og -standardene 6. mai 1975. Norge ble vertsland for kommisjonen som arbeider med fisk og fiskeprodukter. Bare seks uker senere satte regjeringen for matmerking på plass. Jeg kommer til denne forskriften litt senere i artikkelen.

Som beskrevet før, fantes det allerede lover gjeldende mattrygghet i Norge. Noen av de tidligste lover som gjald datomerkingen for matprodukter var *Forskrifter om melk og fløte* §26 fra 17 juli 1953, *Generelle forskrifter for kvalitetskontroll av hermetiske fiskevarer* § 9 fra 14 mai 1968 og *Forskrift om datomerking av lett bedervelige matvarer*, nr. 23/66 fra 1966. Men disse forskriftene regulerte ikke alle produkter på en jevn måte for hel Norge og de var regulert av ulike myndighetsinstanser. Det ble også brukt forskjellige metoder for kontroll. Informasjonen ble gitt ved en kode i stedet ved en dato. Det var heller ikke et felles regelverk som standardiserte merking for alle matprodukter.

Dette kaoset med ulike metoder og instanser for kontroll var nok medvirkende for at det på 1950-tallet ble tatt initiativ for å lage en generell lov som forholdt seg til markedsføring og merking av alle forbruksvarer. I 1957 ble det nedsatt et utvalg[147] som skulle arbeide med en *Innstilling[148] om kvalitetskontroll og bestemmelser for forbruksvarer.* Utvalget ble ledet av Ragnar Christiansen (Arbeiderpartiet, regjeringsparti på den tiden) og besto av medlemmer fra sosial, industri, fiskeri, landbruks, familie- og forbrukssaker departement pluss forbrukerrådet. I februar 1963, etter å ha gjennomgått gjeldende kvalitets- og merkelover og sammenlignet den norske saken med situasjonen i andre land, kom flertallet av utvalg til den konklusjon at det var behov for en generell lov for kvalitet (kontroll) og merking som skulle være sett ned i en (hoved)lov med tilhørende forskrifter. Flertallet av kommisjonen foreslo følgende lovtekst:

> *Formålet med denne lov er å legge forholdene best mulig til rette for forbrukerne ved deres bedømmelse og valg av forbruksvarer samt å sikre at varene er egnet til å tilfredsstille de behov de er framstillet for å dekke. (§1, s. 64)*

Loven skulle inkludere merking, reklame, garanti og serviceordninger og være grunnlaget for kommende forskrifter om merking, kvalitet, produksjon, emballasje og transportteknologi etc.

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[147] Dersom det gjelder en omfattende lov, nedsettes gjerne et utvalg bestående av fagfolk med spesialkompetanse på lovområdet. Utvalget får i oppgave å komme med en anbefaling til departementet. See website from Stortinget: https://www.stortinget.no/no/Stortinget-og-demokratiet/Arbeidet/Lovarbeidet/

[148] Når en komité har sluttført sitt arbeid med en sak, avgir komiteen en innstilling. Innstillingen blir deretter behandlet i Stortinget. Gjennom innstillingen markerer partiene sine politiske standpunkter, og fremmer forslag til vedtak. https://www.stortinget.no/no/Stortinget-og-demokratiet/Arbeidet/Om-publikasjonene/innstillinger/

Innstillingen ble sendt til departementet for familie og forbrukssaker. Men, mens departementet forberedte forslaget til loven tok en borgerlig koalisjon over regjeringsmakten.[149] Den nye regjeringen baserte seg på mindretallsforslaget som var mot en omfattende regulering av kvalitet (kontroll) og merking. Årsaken til denne motstanden var at industrien var redd at disse bestemmelser kunne lede til diskriminering av norsk produksjon. Basert på innstillingen fra 1963 og med kravene av industrien i bakhodet, så lagde regjeringen en Odelstingsproposisjon (Ot. prp. Nr. 61 1966-67 som ble presentert ovenfor Odelstinget av statsråd Elsa Skjerven (Kristelig folkeparti) den 7 april 1967.[150] Der sto det:

> *Departementet finner for sin del at det ikke synes å være særlig behov for å innføre en generell plikt til merking. [...] Et system av denne art må antas å være lite praktisk også fordi en vanskelig kan påby en merking som ikke er vanlig hos våre handelspartnere. [...] Departementet legger eller vekt på at forbrukerne prinsipielt har berettiget krav på en grunnleggende informasjon om enhver forbruksvare. Departementet er på denne bakgrunn kommet til at det bør foreslås en lov om merking av forbruksvarer, hvor det i loven trekkes opp en ramme for de opplysninger som forbruksvarer kan kreves merket med, og at det så overlates til Kongen til enhver tid å bestemme hvilke varer som skal merkes med (p.13).*

En av hovedargumentene var at, selv om forbrukerbeskyttelse og informasjon var viktig, så skulle ikke fri flyt av internasjonale produktene bli rammet av en ensidig lov. Basert på disse synspunkt ble en fullmaktslov vedtatt, som også inneholdt mulighet til vide muligheter til regulering i fremtiden. [151]

Nå var den foreslåtte loven endret fra en kvalitetslov, inkludert kvalitetsstandarder, markedsføring og reklame, garanti og service til en ren merkelov med ganske begrenset obligatorisk informasjon - alt annet måtte reguleres i separate forskrifter. Denne loven ville

[149] Lange, *Samling om felles mål, 1935-70*.
[150] Forslag til lovvedtak truffet først i Odelstinget og deretter i Lagtinget. https://snl.no/proposisjon
[151] Fullmaktslov, vanlig betegnelse på lov der den lovgivende makt, Stortinget, gir andre organer myndighet til å treffe nærmere bestemmelser. https://snl.no/fullmaktslov

bli et tilskudd og alternativ til frivillig kvalitetsmerking utført av Varefakta-Komiteen.[152] Sosialkomiteen la proposisjonen fram som innstilling O. VII. Flertallet av komiteen var enig med lovforslaget og forslaget ble først presentert til 112e ordentlige stortingsforhandlingen 1967-68 i Odelstinget 3. mai 1968 og deretter til 112e ordentlige stortingsforhandlingen 1967-68 II i Langtinget 10. mai 1968. Under diskusjonen i parlamentet på 3. mai ble forslaget møtt av sytten spørsmål og kommentarer gitt av ti forskjellige personer. Diskusjonen mellom medlemmer av "borgerlig regjering" bestående av Høyre, Senterpartiet, Venstre og Kristelige Folkeparti med opposisjonspartiet, Det norske Arbeiderparti, gjenspeilet de ulike stillingene om beskyttelse av industri eller forbrukere. Og selv om ingen av politikerne offentlig kunne nekte konsumenter tilgang til informasjon, så ble det spørsmål om hvor stort behov og rettigheter av forbrukerne skulle bli.[153]

I både Odelstinget og i Lagtinget gikk loven gjennom. Den ble formelt akseptert og satt i effekt den 24. mai 1968. På samme måten som loven fra 1933, så veide og denne gangen industriens argumenter tyngre enn argumentene til forbrukerne. Behovet for å beskytte norsk industri og næringslivet erstattet behovet for en vidtrekkende kvalitetskontroll og forbrukerinformasjon. [154] Selv om retorikken dreide seg fortsatt om forbrukernes behov for beskyttelse og informasjon, varden politiske virkelighet og den praktiske diskusjonen annerledes enn de opprinnelige intensjonene. Likevel, for første gang så hadde Norge en allmenn og nasjonal lov om merking av forbruksvarer og reguleringer som gjeldene spesifikke produkter(grupper) skulle følge.

Syv år senere, den 25 juli 1975, utstedte Forbruker og Administrasjonsdepartementet den *Forskriften om merking av forbruksvarer* som ikke bare regulerte den *siste forbruksdag* av lett bedervelige matvarer (som delvis hadde eksistert tidligere) men det ble også etablert en *best før dato* som gav et lovmessig rammeverk som skulle fremme kvalitet for pengene.

[152] Varefaktakomiteen opprettet av Forbrukerrådet 30.06.1954 som samarbeidsorgan for forbrukere, produsenter, forhandlere, forskere, standartiseringsorganisasjoner og enkelte offentlige institusjoner – oppgave var å «arbeide for økt bruk av opplysende varedeklarasjoner (først i 1955 for fersk fiskepudding) og for kvalitetsmerking» men «Varefakta sparer ikke publikum for å velge selv. Varefakta hjelper til å treffe riktige valg» (Masteroppgave av Anders Persson: Enklere å være forbruker? Oslo, 2007) Fungerte fra 1970 som rådgivende utvalg for Forbruker- og administrasjonsdepartement i spørsmål vedrørende lov om merking av forbruksvarer. http://www.nsd.uib.no/polsys/data/forvaltning/enhet/15301/endringshistorie - 25th September 2017.

[153] Statsråd Elsa Skjerven i Kristelig Folkeparti.

[154] Se også Elvbakken and Rykkja, "Norsk matkontroll - konflikter om kontrollhensyn og verdier", som skriver om spenningen mellom Helsedepartement og Landbruksdepartement om favoriseringen av Landbruket.

Artikkel 8, *Holdbarhet*, sa at: «Merkingen skal skje ved teksten «Best før» og angivelse av dag, måned og år. Er næringsmiddel holdbart lengre enn 12 uker, kan angivelse av dag utgå *[…]. «*

I denne delen så vi på hvordan den nye behov angående forbrukerens kunnskap og informasjon om mattrygghet og kvalitet ble institusjonalisert i datomerkingen som standardiserte holdbarheten slik at den var forutsigbar og passet inn et industrielle matsystemet. Det «lille merket på pakken» ble tatt i bruk og kombinerte diverse sosiale, politiske, økonomiske og teknologiske i en omfattende styringsteknologi[155] som «foreskrev» en viss måte å håndtere og bruke mat på. Det var staten som gav «språket» men den nødvendige informasjonen måtte fylles inn av produsenter, noe som påvirket etterpå hele næringsmiddelkjeden. Datomerkingen som en «megler» mellom produsenter og forbrukere, gjorde det nå mulig for sistnevnte å foreta informerte vurderinger om kvalitet og trygghet av maten. Eller har det ikke? Selv om den juridiske teksten antyder at nå ville forbrukerne få den informasjonen de behøvde for å ta informerte valg angående holdbarhet og kvalitet på matvarer, var virkeligheten langt unna. På grunn av motstanden fra næringsmiddelindustrien tok det mer enn ti år før datomerkingen var fullstendig implementert.

Den langsomme implementeringen av datomerkingen

Selv om forskriftet ble utstedt i juli 1975, så trådte den ikke i kraft før et år senere. Denne lange overgangsperioden var en konsesjon som departementet hadde gitt industrien. Reguleringen ble møtt med sterk motstand, ikke bare fra produsenter, grossister og detaljhandel, men også i deler av den statlige administrasjonen. Et tidligere ansatt i Mattilsynet minnes:

> *Veldig motstand, veldig motstand (...) jeg hadde en gammel kollega, og han hadde vært med lenge, og han sa han nesten kunne tro at vi skulle få sult i dette landet på grunn av datomerking.* [156]

[155] Miller og Rose, *Governing the Present*.
[156] Intervju Mattilsynet, oktober 2017

Norges spesielle geografi (et stor land med lange avstander) og demografi (lav befolkningstetthet) førte denne personen til å frykte at en streng utøvelse av utløpsdatoen kanskje ville føre til matmangel i enkelte deler av landet. Avstander i Norge er stor og var frakting av kort holdbare produkter til forbrukeren «i tide» en utfordring på syttitallet:

> *Og det blir jo nesten sånn anekdotisk da, men da var det veldige problemer her i Trøndelagsfylkene med kaffe. Fordi de malte kaffe og så pakket de det, det var før de hadde disse pakningene de har nå, så de pakket det på kaffepose og før det var distribuert ut til det ytterste skjær, så var det jo, den kaffen gått ut av holdbarhet.*[157]

På den tiden hvor datomerkingen ble konstruert så hadde nordmenn flest ennå ikke fått nyte godt av den velstanden som kom med oljepengene.[158] Folk, spesielt menneske i de mange aviseliggende områdene, var vant til liten variasjon og lav kvalitet av maten:

> *Du må jo huske på at helt opp til 70 så var Norge et ganske fattig land. […] da hadde du kanskje ikke så mye å komme med. Og da var jo butikkene her ute, det var jo potetene var gamle og alt var gammelt liksom, […] man hadde helt ikke inne.*[159]

Forbrukere var ennå ikke så bekymret vedrørende ferskheten, og kvaliteten på produktene på samme måte de er i dag – behov og krav for ferskhet var annerledes. Også var forbrukerne fremdeles mindre organiserte, til tross for Forbrukerrådet, enn industri og handel og derfor veide produsentenes og selgeres innvendinger tyngre når 1975 - reguleringen ble innført. På 1960- og 1970-tallet var det grossistene, ikke så mye detaljhandel, som avgjorde produkter og priser. For å holde prisene nede, så bestilte de i store kvanta som var ofte vanskelig å distribuere og selge før produktene har gått ut på dato. Derfor ble både grossistene og detaljhandel misfornøyde med datomerkingen siden den forstyret rutinene deres når det kom til kjøp og salg: «Grossister og kjøpmenn var redd

[157] Intervju med Mattilsynet, juli 2016
[158] Utnyttelsen av olje- og gassreserver i Nordsjøen startet i 1969 og Statoil ble grunnlagt i 1972, og selv om lokalt rikdom begynte å øke raskt på grunn av jobber i oljeindustrien, tok det litt tid før det spredte seg tenkte hele befolkningen i Norge – i Bull, *Norges historien etter 1945*.
[159] Intervju Mattilsynet, oktober 2017

for å bli brennende inne med varer som ikke var datostemplet, og som hadde liten omsetningshastighet. De likte ikke systemet med datomerking»[160]

Et annet hinder for en felles og generell datomerking var konkurrerende departementer som hadde utstedt merking for sine «egne» produkter (se ovenfor). Dette førte til en overlappende og forvirrende lovgivning som var ikke så lett å forandre.

> *[…] Landbruksdepartementet ga ut en lov om kvalitet på landbruksvarer også har du Fiskeridepartementet. […] Og alle disse lovene var ganske vanskelige fordi det var, si sennep og ketsjup da. Sennep var en vanlig vare og ketsjup var en vegetabilsk konserv, dermed gikk de under to forskjellige lover. Og de produserte jo ganske mye på samme fabrikker da.*[161]

De følgende produktene havnet under lovgivningen fra enten Jordbruksdepartementet eller Fiskeridepartementet og var derfor unntatt fra den 1975-forskriften for produktmerking: melk og fløte, norske grønnsaker, frukt, bær og poteter: vegetariske bokser, inkludert brus; iskrem, honning; margarin; egg; pakket fisk. Forbruker og administrasjonsdepartementet måtte også gjøre innrømmelser ovenfor næringen om gjennomføring av forskriften. Derfor var det en lange overgangstid før forskriften ble sett i kraft og datomerkingen ble innført trinnvis.[162]

I tillegg til at det gikk et år mellom vedtaket om forskriften og en iverksettelse ble det også gitt dispensasjon fra datomerking for alle varer med en holdbarhet som var lengre enn 12 uker fra til 1. april 1977.[163] Det fantes også en lang liste med ennå flere produkter som på generell basis var unntatt av datomerkingen: friske grønnsaker, røtter og knoller, frisk frukt og bær; maismel og potetmel; salt; sukker og karamell; kakao og sjokolade; dråper og tyggegummi; eddik; naturlig mineralvann, brus, selters og alkoholholdige essenser. Når man ser på disse to lister over unntak og tiden det tok før forskriften trådde i kraft, så kan man trygt hevde at dette var en begynnelse men likevel langt fra en generell datomerkingsregulering. Det var ikke før den *Generelle forskriften for merking mv. av*

[160] Forbrukerrapporten mai 1963: *Hvorfor ikke datostempling?*
[161] Intervju med Mattilsynet, juli 2016
[162] Statsråd Annemarie Lorentzen under høringen i Stortinget 31 mars 1976.
[163] Forbrukerrapporten, august 1976

ferdigpakkede næringsmidler, 25.09.1986, nr 1917 ble utstedt av Sosialdepartementet at forskriften fikk et reelt fotfeste i Norge. Denne forskriften eliminerte alle tidligere unntak og ekskluderte kun ferdigpakkede, ubearbeidede friske bær, frukt, grønnsaker, røtter og knoller og ferdigpakket ferskt brød og annen fersk gjærbakst fra kravet om datomerking. Så bare på slutten av 1980-tallet, hadde datomerkingen fått sitt fulle, juridiske potensial.[164]

Konklusjon – hvor er vi i dag?

Historien om konstruksjonen av datomerkingen som en megler mellom produsenter og forbrukere er den del av historien om hvordan forbrukernes rettigheter har blitt styrket gjennom de siste 150 år og om hvordan en voksende industri innen matproduksjon skapte en større distanse mellom jord og bord. Fra sjeldne, situasjonelle og lokale lover om forbrukervern og folkehelse, kom forbrukerne sakte inn i bildet i annen del av den 19. århundre. Da begynte ansvaret for mattrygghet å forflytte seg fra forbrukere over til produsenter og leverandører. Det var myndighetene som kom på banen med forskrifter for å sikre folkehelsen. Dette skjedde i kjølvannet av en stat som trodde på kraften i vitenskapen og teknologien og samfunnets smarte evne, og muliggjorde forskrifter som ikke bare handlet om mattrygghet, men også ærlig handel.

Denne trenden fortsatte etter den andre verdenskrig, da rasjoneringen ble opphevet, og mangel på mat ble til «overflod». Med økende velstand og kjøpekraft, begynte folk å bli mer fokusert på kvaliteten, istedenfor kvantitet. Behov hadde forandret seg. Samtidig gjorte import av nye og ukjente varer og nye emballasje- og produksjonsmetoder det vanskelig for forbrukerne å selv dømme kvaliteten av maten. Det ble nødvendig med meglere, både menneskelige og ikke - menneskelige for å informere forbrukerne og hjelpe dem i deres valg. 1960-tallet var tiden da forbrukerrettigheter og representasjon kom i vinden. Både uavhengige og statlige institusjoner ble grunnlagt som tok forbrukerrettigheter som deres viktigste prioritering. Ved å gjøre begge ting, både utdanne forbrukere og stå opp for deres rettigheter, så var lovgivingen nå nødt til å ta dette på alvor.

Selv om loven om merking av forbruksvarer fra 1968 ble vannet ut i forhold til det som var tiltenkt, nemlig ambisjonen om en vidtrekkende informasjon til forbrukerne, så måtte

[164] Flere produkter ble lagt til i listen over unntak Forskrift om merking mv av næringsmidler, nr. 1385 fra 21. desember 1993 (for eksempel: vin og andre alkoholholdige drikker, eddik, koksalt, sukker, tyggegummi eller is i enkelte porsjoner).

likevel forbrukerens krav til informasjon og merking tas på alvor. På grunn av den spesielle norsk geografi og demografi, og sterk motstand fra næringsmiddelindustrien, ja til og med regjering og administrasjon, så tok det ti år før forskriftet førte til at merking av forbruksvarer fikk fullt gjennomslag i hele matkjeden og over alle matprodukter. Her vises hvordan sosiale, politiske og økonomiske aspekter er involvert i å skape styringsteknologier men samtidig hvordan vanlige teknologier som det lille merket på pakken tåler for den underliggende politikk. Der er en sammenheng mellom matkultur, matpolitikk og matteknologi som vi kan ser gjennom datomerkingen og hvordan dens utvikling gikk fra idé til hverdags praksis langs hele produksjonskjeden.

Datomerking var den nødvendige styringsteknologien som gjorde det mulig for forbrukerne å bedømme ferskhet, trygghet og kvalitet på maten i en forandret matverden. I et industrielt matsystem tjener den som megler som forbinder jord og bord. Slik har datomerkingen blitt en av de mest stabile regjeringsteknologiene, og «script» har (nesten) vært uendret frem til i dag. Imidlertid leses de første ideene og målene (forbrukerinformasjon) som er «skrevet inn» på og «foreskrevet» ofte annerledes av forbrukere enn opprinnelig antatt. Mange forbrukere kom til å stole på datoen etiketten mer enn sine egne sanser som fører til betydelige mengder unngåelig matsvinn. I dag kan datomerkingen og infrastrukturer som er bygd rundt den virke som om er «irreversibel» for mange, mens andre utfordrer selve ideen.

Det virker at der er fleksibilitet i datomerkingen og forbindelse mellom datomerkingen og matsvinn trenger ikke å være automatisk. Hvis det var mulig å formidle nødvendighet og behov til datomerking til forbrukerne i syttitallet måtte det være mulig å formidle mindre avhengighet til datoen og mer bærekraft nå. I dag er det mange anstrengelser for å redusere den økende mengden av matsvinn på grunn av (misforstått) datomerkingen til mat. I Norge ser man at industri og myndighetene går sammen for å nå FNs mål om bærekraftig produksjon og forbruk av mat. Initiativer kommer fra en bransjeavtale[165] mellom myndigheter og ledere i matindustrien for å nå redusere matsvinn i Norge til det halve innen 2030. Et eksempel er den forandringen i script av datomerkingen på flere produkter, spesielt meieriprodukter og egg («best før men ofte god etter»). Et annet initiativ er etablering av matsentraler i de store byene i Norge (Oslo, Bergen, Trondheim osv.) for å løse to moralske

[165] https://www.regjeringen.no/no/aktuelt/avtale-om-a-redusere-matsvinn/id2558931/ - 4 oktober 2019

problemstillinger rundt matsvinn: gi til dem som trenger mens du unngå å forspille resurser. Imidlertid så arbeider slike prosjekter «rundt» datomerkingen uten å utfordre essensen av det. Tiden vil vise om den «lille datoen på pakken» har kanskje selv begrenset holdbarhet.

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