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ANIMAL INDUSTRIES

NORDIC PERSPECTIVES ON THE EXPLOITATION OF ANIMALS SINCE 1860

Edited by Taina Syrjämaa, Marja Jalava, Taija Kaarlenkaski, Otto Latva, Eeva Nikkilä and Tuomas Räsänen

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Introduction: Towards a history of animal industries in the Nordic countries

In 2019, Juha Marttila, the President of the Central Union of Agricultural Producers and Forest Owners (MTK) in Finland, expressed his astonishment in a press interview about the increasing public criticism of intensive meat and dairy production: "The cow has kept us alive for some ten thousand years, so how come it has now been made a criminal?"[1] He was quite right about the long interrelationship between humans and livestock. At the same time, however, the comment ignored the profound change from the traditional model of raising a small number of animals as a part of subsistence farming with low-profit or non-profit thresholds into modern animal industries that consist of all kinds of activities vis-à-vis the manufacturing of animal products for a globalised market, which follows an industrial logic and aims at profit. That is not to say that traditional small-scale livestock production would have been problem-free.[2] However, as the number of farmed animals on the planet has quadrupled since the 1960s, together with industrial aquaculture, both immediate and chronic problems caused by animal industries have simultaneously accelerated exponentially.[3]

This book explores the history and development of animal industries by focusing on the Nordic countries over a long time span stretching from the late nineteenth century to the present day. It examines the roles of farmed animals and animal industries in countries that during this period transformed from being poor and predominantly rural to the richest welfare states in the world. In the influential narrative about world development given by modernisation theory, the industrialisation of animal agriculture is often portrayed as an inevitable

1 Cited in Anita Simola, "Tuottajien nokkamies ihmettelee: Lehmä on pitänyt meidät hengissä 10 000 vuotta, miten siitä nyt tuli suuri rikollinen?," *Aamulehti*, March 28, 2019.

2 According to the Finnish agrarian historian Teppo Vihola, malnutrition and negligent treatment of farmed animals were common in traditional subsistence farming as common people often lacked proper nourishment, decent living conditions and other adequate resources. See Teppo Vihola, *Leipäviljasta lypsykarjaan. Maatalouden tuotantosuunnan muutos Suomessa 1870-luvulta ensimmäisen maailmansodan vuosiin* (Helsinki: SKS, 1991), 40–41; Teppo Vihola, "Pärjääkö pienviljelys?," in *Suomen maatalouden historia II*, ed. by Matti Peltonen (Helsinki: SKS, 1994), 169–173.

3 See, for instance, Tony Weis, "Towards 120 Billion: Dietary Change and Animal Lives," *Radical Philosophy* 199 (Sept/Oct 2016): 8–13.

https://doi.org/10.1515/9783110787337-001

process. To cite the geographer Tony Weis, while all nations are supposedly striving to ascend some sort of shared pathway out of poverty, the climb up the "animal protein ladder" is considered in this theory to be part and parcel of the climb up the "development ladder." As the naturalising effect of such transitional narratives easily obscures the staggering pace and scale of growth in animal production since the late nineteenth century, it is hence vital to ask how we got to where we are now.[4] Our book makes visible historical and cultural processes that have created the current tension between the (self-)image of the Nordic countries as progressive and advanced in animal protection and the fact that the prevailing Nordic consumption practices are highly excessive in relation to planetary resources and are currently among the most unsustainable on a global scale.

According to Egbert Hardeman and Henk Jochemsen, both philosophers of agricultural ethics, the industrialisation of animal agriculture can be defined by five main characteristics. The first is "mechanisation," whereby human and animal labour is replaced by machines and technological procedures. The second salient development is "intensification," meaning an increase in production per animal. The third characteristic of industrialisation is "specialisation," whereby farms specialise in one type of animal, instead of rearing different species of livestock. Fourth, "science and technology" assume a leading role within agronomic research, which considers an increase of productivity as its main goal. And finally, the industrialisation of agriculture has led to the "increased scale" of farming, and farms have increasingly come to resemble factories. On the cultural and economic level, the central aspect of this process is a drive for efficiency and profit.[5]

The historical development of the characteristics of agricultural industrialisation mentioned above can be traced back to before the nineteenth century. Nevertheless, the growth of innovations, such as steam powered and refrigerated transportation vehicles, led during the latter part of the nineteenth century to a substantial increase in the possibilities and scale of livestock production as more commodities and live animals could be transferred from one place to another.[6] This alone was a significant shift as pre-industrial farms usually operated locally and the transportation of goods or animals was more difficult, if not impossible.

4 Tony Weis, *The Ecological Hoofprint. The Global Burden of Industrial Livestock* (New York: Zed Books, 2013), 71–72.

5 Egbert Hardeman and Henk Jochemsen, "Are There Ideological Aspects to the Modernization of Agriculture?," *Journal of Agricultural and Environmental Ethics* 25 (2012): 659, 666; Amy J. Fitzgerald, *Animals as Food: (Re)connecting Production, Processing, Consumption, and Impacts* (East Lansing, MI: Michigan State University Press, 2015), 24.

6 Fitzgerald, *Animals as Food,* 24.

The different characteristics of agricultural industrialisation must also be seen as deeply interconnected. Specialisation, for example, did not just refer to the production of certain types of animals, but it also created specialised mechanisation and technology, such as milking machines for dairy cattle.[7] During the nineteenth century, animals gradually became incorporated into the booming industrial production system as a mass processed raw material. The intensification of the exploitation of animals was not the sole regard of food industries, but animal bodies were also turned into consumer goods, such as shoe soles, into grease and belts that were utilised in the functioning of factories, and into bonemeal to fertilise fields and increase agricultural productivity.

As the environmental health scientist Ellen K. Silbergeld has argued, this gradual transformation of animal agriculture resulted in the full industrialisation of intensive animal production during the twentieth century. It initially included the "confinement" of animals within enclosed facilities for the purpose of efficient management and enhanced productivity. Confinement, in its turn, facilitated "concentration," that is, the production of large numbers of animals within a small area, such as multistorey pig and poultry houses or fish breeding stations. The last step is "integration," which refers to the adoption of a centralised organisational structure of ownership and profit. The pioneering branch was broiler chicken production in the United States. It became thoroughly industrialised during the 1930s, thus offering a model for the rest of the American animal food industry. After the Second World War, as part of the post-war economic and social aid offered by the United States, the industrial and intensive production of food animals and animal products spread to Europe and many developing countries, such as Brazil, China, Thailand and India.[8]

The number of animals used in food production in most European countries was reduced immediately after the Second World War, and consumption of grain products temporarily increased. By the latter half of the 1950s, however, the European trade in animal-based products, such as butter, cheese and meat, returned to pre-war levels. In general, a significant number of people left agriculture for other occupations in the 1950s and 1960s, and mechanisation and the use of fertilisers on farms increased.[9] According to Silbergeld, the damage to national agricul-

7 Adrian Franklin, *Animals and Modern Cultures: A Sociology of Human-Animal Relations in Modernity* (London: SAGE, 1999), 127–128.

8 Ellen K. Silbergeld, *Chickenizing Farms & Food: How Industrial Meat Production Endangers Workers, Animals and Consumers* (Baltimore: Johns Hopkins University Press, 2016), 30–45, 61, 70–72.

9 Paul Brassley, Carin Martiin and Juan Pan-Montojo, "European Agriculture, 1945–1960: An Introduction," in *Agriculture in Capitalist Europe, 1945–1960: From Food Shortages to Food Surpluses*, ed. by Paul Brassley, Carin Martiin and Juan Pan-Montojo (London: Routledge, 2016).

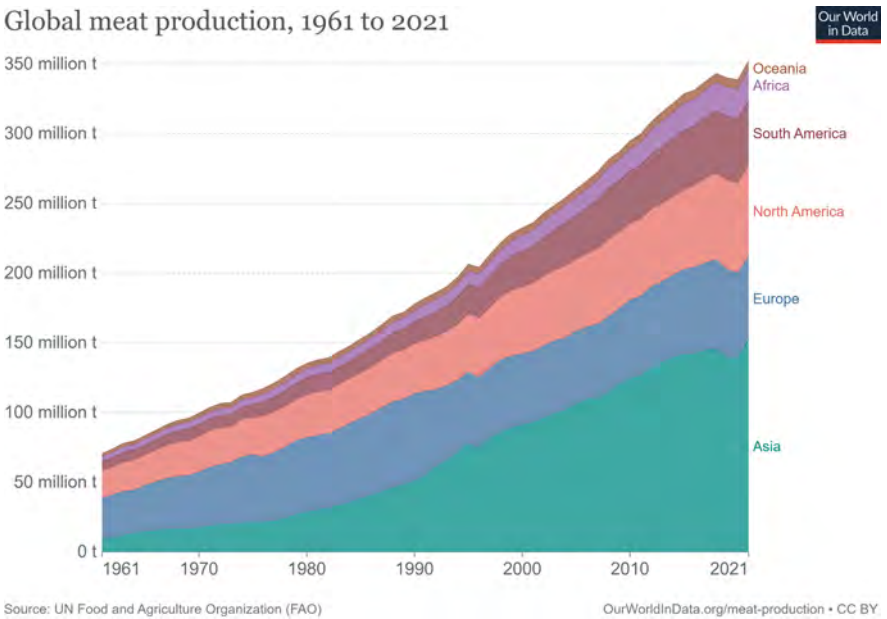

Figure 1: Global meat production, 1961 to 2021.
Source: Hannah Ritchie and Max Roser, "Meat and Dairy Production," accessed September 27, 2023, https://ourworldindata.org/meat-production. CC BY 4.0.

tural sectors during and after the Second World War also opened the door to the spread of industrial animal production in Europe.[10]

During this era, the industrialisation of animal production was also accompanied by increased consumption of animal protein. Despite the fluctuations caused by wars and economic crises, the global trend – based on cross-country comparisons – indicates a strong positive relationship between per capita meat supply and average gross domestic product (GDP) per capita. Consumption rates had already begun to grow in the interwar period, but the "Great Acceleration" truly took place since the 1960s. Thus, between 1961 and 2010, global meat production increased by more than three times (Figure 1). It exceeded 230 million tonnes annually by 2000, so that the average European and North American today consumes annually nearly 80 and 110 kilos respectively (Figure 2).[11] During the same period, the consumption

10 Silbergeld, *Chickenizing Farms & Food*, 70.
11 Chris Otter, "Eating Animals," in *The Routledge Companion to Animal–Human History*, ed. by Hilda Kean and Philip Howell (New York: Routledge, 2019), 476; Hannah Ritchie and Max Roser,

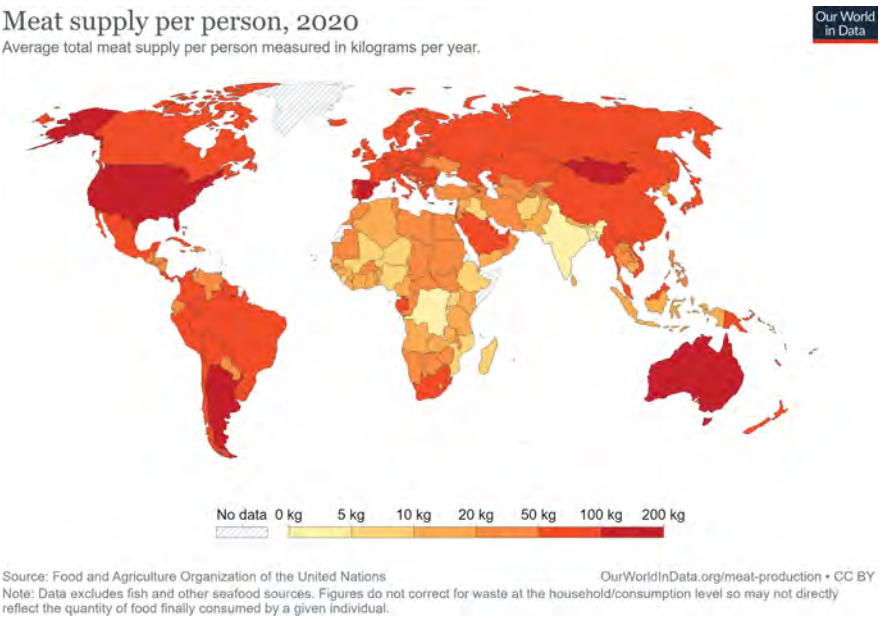

Figure 2: Meat supply per person, 2022.
Source: Hannah Ritchie and Max Roser, "Meat and Dairy Production," accessed September 27, 2023, https://ourworldindata.org/meat-production. CC BY 4.0.

of fish and seafood has quadrupled, while production of farmed fish has boomed from a negligible two million tonnes to more than 100 million tonnes today.[12]

The dairy industry is another influential field of animal production. Statistics show that levels of milk consumption are highest in Europe, North America and Oceania. Furthermore, the dairy sector is the second-largest agricultural sector in the European Union and lactose intolerance is rather rare, especially in Northern and Central Europe. The low milk consumption rates in Asia and Africa are largely explained by the fact that most of the people in those areas are lactose intolerant, and this may also have an effect on the cultural significance of milk.[13] Moreover, excessive consumption of milk is strongly intertwined with modernisation, urbani-

"Meat and Dairy Production," last modified November 2019, accessed August 17, 2023, https://ourworldindata.org/meat-production.

12 Richie, "The World Now Produces More Seafood from Fish Farms than Wild Catch," last modified September 13, 2019, accessed August 17, 2023, https://ourworldindata.org/rise-of-aquaculture.

13 "World Population Review: Milk Consumption by Country 2023," last modified April 20, 2022, accessed August 18, 2023, https://worldpopulationreview.com/country-rankings/milk-consump

sation and industrialisation, as well as the development of science and technology. The efficient production, preservation and transportation of milk required innovations that ensured that it would be safe to consume. Consequently, milk has often been associated with progress and modernity.[14]

Today it is a well-known fact that the enormously accelerated scale of animal industries has reached unsustainable levels. According to a study published in 2018, only four percent of the world's mass of mammals are wild animals. The mass of humans accounts for 36 percent of all mammals, while farmed animals account for up to 60 percent. Of the mass of birds in the world, only 30 percent live in the wild, while the remaining 70 percent are farmed. Domesticated animals now amount to around 620 million tonnes of living zoomass, which is ten times that of wild terrestrial animals. This exponential growth of farmed animals contributes, for instance, to nitrate leaching, freshwater shortages, waste disposal, deforestation, soil erosion, high fossil fuel use and biodiversity loss. The sheer number of farmed animals, with the space and energy they exploit, constitutes a key factor that is exacerbating climate change.[15]

In addition to environmental impact, animal industries have also begun to be criticised on ethical grounds. We know more today about animal consciousness and intelligence, which has led to a debate about whether humans have a moral right to use gargantuan numbers of animals in the production of food and other commodities. In forms of industrial animal farming, animals typically lack opportunities to satisfy their behavioural needs, such as nurturing offspring, free movement, or social needs. In addition, breeding aimed at increasing production at a constant rate has led to health problems in farmed animals. One may also ask whether humans have the right to treat intellectual and sentient beings as a means of production at all.

The Nordic countries have followed the global trend of the excessive consumption of animal protein (Figure 3). Finland may act as a case in point of this trend. At the end of the nineteenth century, it was still a poor and peripheral Northern European country. Around 1900, average meat consumption in Finland was 17 kilos per person per year, which was under the Western European average. As the standard of living gradually started to increase in the interwar years,

tion-by-country; Ritchie and Roser, "Meat and Dairy Production"; Hannah Velten, *Milk: A Global History* (London: Reaktion Books, 2010), 15–16, 21–23.

14 Håkan Jönsson, *Mjölk – en kulturanalys av mejeridiskens nya ekonomi* (Stockholm/Stehag: Brutus Östlings Bokförlag Symposion, 2005), 38–41; E. Melanie DuPuis, *Nature's Perfect Food: How Milk Became America's Drink* (New York: New York University Press, 2002), 30.

15 WorldWatch Institute, "Is Meat Sustainable?," *WorldWatch Magazine* 17: 4 (2004); Yinon M. Bar-On, Rob Phillips and Ron Milo, "The Biomass Distribution on Earth," *PNAS* 115: 25 (2018); Otter, "Eating Animals," 476, 487–488.

however, meat consumption also increased. Hence, it had already increased to 35 kilos per person per year on average by the late 1930s. Nevertheless, a major increase only took place from the 1960s, in line with the development of the Nordic welfare state regime. This trend has continued until the present day. In the late 2010s, the average person in Finland consumed 80 kilos of meat annually, which is in line with average levels in Nordic and European countries.[16]

Figure 3: Meat supply per person in Denmark, Finland, Norway and Sweden, 1961 to 2020.
Source: Hannah Ritchie and Max Roser, "Meat and Dairy Production," accessed September 27, 2023, https://ourworldindata.org/meat-production. CC BY 4.0.

Regarding dairy products, the Nordic countries stand out as exceptional consumers of milk even on the European scale, with Finland and Sweden competing for the position of the most milk-loving country in the world (Figure 4). It has been pointed out that cattle husbandry in Northern Europe has been a favourable sector of agriculture due to environmental conditions, with the cool climate helping to prevent

16 Marja Jalava, "Lihansyönnin edistäminen Suomessa 1900-luvun alkupuolella," in *Tunteva tuote – Kuinka eläimistä tuli osa teollista tuotantoa?*, ed. by Taija Kaarlenkaski and Otto Latva (Tampere: Vastapaino, 2022), 95.

the adulteration of milk.[17] Moreover, in the Nordic countries, the promotion of the nutritional healthiness of milk has a long history dating back to the early twentieth century, and dairy husbandry has been highly appreciated in these societies.[18]

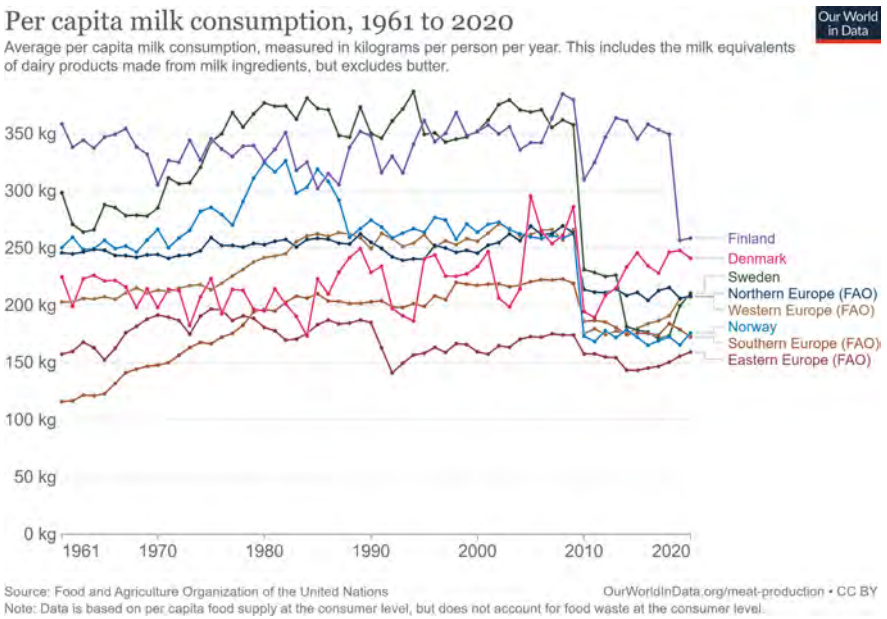

Figure 4: Per capita milk consumption, 1961 to 2020.
Source: Hannah Ritchie and Max Roser, "Meat and Dairy Production," accessed September 27, 2023, https://ourworldindata.org/meat-production. CC BY 4.0.

Although the history and development of animal industries and the exploitation of animals has a global span, the practices involved in contemporary and past animal production are and were hardly unified, as the philosopher Paul B. Thompson has pointed out.[19] This multiformity has also been emphasised by the historian Abigail

17 Ritchie and Roser, "Meat and Dairy Production;" Nicolau-Nos, Roser, Josep Pujol-Andreu and Ismael Hernández, "Milk, Social Acceptance of a New Food in Europe: Catalonia, 19th–20th Centuries," *Dynamis* 30 (2010), 127.

18 Jönsson, *Mjölk*, 32–35; Inger Johanne Lyngø, "The National Nutrition Exhibition: A New Nutritional Narrative in Norway in the 1930s," in *Food, Drink and Identity: Cooking, Eating and Drinking in Europe Since the Middle Ages,* ed. by Peter Scholliers (Oxford: Berg, 2001), 145, 158; see also Taija Kaarlenkaski's chapter in this volume.

19 Paul B. Thompson, "The Ethics of Food Animal Production," in *The Oxford Handbook of Animal Studies*, ed. by Linda Kalof (New York: Oxford University Press, 2017), 366.

Woods, among others. According to her, the historiography of twentieth-century livestock production tells a straightforward story of industrialisation, which is often teleological in its orientation. To cite Woods, the nature of "modern," "efficient," and "productive" agriculture is assumed to be self-evident without considering what these terms mean, and to whom, or how their meanings have changed over time in relation to production practices and different social, political, and economic contexts.[20] This alone calls for a more focused and historically situated approach that considers, for example, the societal, cultural, political and environmental aspects of industrialising and industrialised livestock production.

Thus far, however, historical research on animal industries has tended to pay attention, rather one-sidedly, to the forerunners of the industrialisation of animal production. These include the centralised slaughterhouses built in early nineteenth-century Paris and the creation of Chicago Union Stockyards in 1865, equipped with a conveyor belt to handle the flow of animals, as well as other big cities like Berlin, London, Mexico City and New York.[21] In the Nordic context, Denmark has been considered an emblematic case. The agricultural sector was (and still is) considered to be a core component of the Danish economy. A dramatic transition took place in the 1870s, when the falling price of grain encouraged Danish farmers to rapidly convert to livestock-based production, above all, dairy products, pork and beef. This shift to a large agro-machine based economy was enabled by co-operative ownership, extensive governmental support and new production methods, such as the centrifugal separator that could separate milk into cream and skimmed milk. As a result, Denmark was already a net importer of grain from 1900, which was used as feedstuff in livestock-based food industry, the products of which were targeted for export markets.[22] As the historian Chris Otter has noted, the simultaneous rise of the Danish bacon industry, using standardised pigs as its raw material in bacon factories, heralded the age of the industrialised meat product with the drift to enclosed feeding

20 Abigail Woods, "Rethinking the History of Modern Agriculture: British Pig Production, c. 1910–65," *Twentieth Century British History* 23: 2 (2012): 167–168.

21 Noélie Vialles, *Animal to Edible*, trans. J. A. Underwood (Cambridge: Cambridge University Press, 1994); Paula Young Lee (ed.), *Meat, Modernity, and the Rise of the Slaughterhouse* (Durham: New Hampshire University Press, 2008).

22 Martin Jes Iversen and Steen Andersen, "Co-operative Liberalism: Denmark from 1857 to 2007," in *Creating Nordic Capitalism. The Business History of a Competitive Periphery*, ed. by Susanna Fellman, Martin Jes Iversen, Hans Sjögren, and Lars Thue (Basingstoke: Palgrave Macmillan, 2008), 273–280; Mads Mordhorst, "Arla: from a Decentralized Co-operation to an MNE," in *Creating Nordic Capitalism. The Business History of a Competitive Periphery*, ed. by Susanna Fellman, Martin Jes Iversen, Hans Sjögren and Lars Thue (Basingstoke: Palgrave Macmillan, 2008), 335–344.

units, in which porcine life was thoroughly commodified and shaped by the dictates of capital.[23]

While acknowledging the important role of Denmark in the emerging global agro-food systems based on animal industries, this book takes a different angle. By placing a particular focus on those Nordic countries that were, however, not in the vanguard of the industrialisation of animal agriculture – Finland, Norway and Sweden – it aims to shed light on the variety and complexity of pathways to industrialisation in various local, national and regional settings. From this perspective, Denmark was in fact the exception among the Nordic countries. As the historians Martin Jes Iversen and Lars Thue have emphasised, it was small, densely populated and situated in the junction between northern and eastern Europe and Britain and Central Europe, being thus well connected through trade routes to important markets in Germany, the Netherlands and Great Britain. Quite the contrary, the other Nordic countries were still marked by large unexploited and underdeveloped areas in the nineteenth century and located in the economic periphery of Europe, which offered different premises for the development of animal production.[24]

Finland, Norway and Sweden are rather large countries, for European standards, stretching from mild continental climate with deciduous forests in the south up to the Arctic and alpine zones of Scandinavian mountains. This bio-geographical and climatic variability has produced different animal industry chronologies, both between and within the Nordic countries. For example, Norway has a long history of capital-intensive fishing, which had already begun to expand into the high seas in the early twentieth century. While coastal fishing continued to be of great importance, it also developed into a highly specialised and technologically sophisticated industry.[25] In the Baltic Sea area, in contrast, coastal fishing prevailed as a dominant practice. Indeed, in many cases it has been practiced by small-scale fishers based around family units and in village communities until quite recently. The far north has also been a latecomer in terms of industrialising its animal keeping. Thus, only in the past few decades has subsistence herding of reindeer given way to effective mass production. Consequently, a rapidly expanding number of ani-

23 Chris Otter, "Eating Animals," 478–479.

24 Martin Jes Iversen and Lars Thue, "Creating Nordic Capitalism – the Business History of a Competitive Periphery," in *Creating Nordic Capitalism. The Business History of a Competitive Periphery*, ed. by Susanna Fellman, Martin Jes Iversen, Hans Sjögren and Lars Thue (Basingstoke: Palgrave Macmillan, 2008), 9–10.

25 See, for example, Dag Standal, Signe Annie Sønvisen and Frank Asche, "Fishing in Deep Waters: The Development of a Deep-Sea Fishing Coastal Fleet in Norway," *Marine Policy* 63 (2016): 1–7.

mals are often fed with fodder imported from abroad and are controlled with the help of modern technology and processed in factory-like slaughterhouses.[26]

Despite all these differences, however, the focus on the Nordic countries also allows the detection of certain important common traits and long-term continuities. Among the most notable is the rapid transformation of the Nordic countries from being poor and predominantly rural economies to being the richest welfare states in the world. As this book shows, an essential part of this progress has been the intensifying exploitation of animals since the latter part of the nineteenth century. As the sociologist Adrian Franklin has pointed out, consumption of animal-based products, such as meat or milk, formed a part of larger social developments that took place in the twentieth century, namely modernisation and democratisation. In short, animal proteins were seen as a pathway to better nutrition and the welfare of populations in western societies.[27] At the same time, however, the nutritional change based on this dominant conception of development did not happen automatically as though people were biologically wired to eat more and more animal protein. It would be nearer the mark to state that the process was strongly driven by public and commercial efforts to enable further economic growth and capital accumulation.[28]

Moreover, the industrialisation of animal agriculture has enjoyed strong political support in all Nordic countries. Consequently, this sector has obtained significant support from government budgets, while also being supported through its emphasis on research and development in the agricultural sector. Fish farming in Norway provides a fitting example, as it has expanded since the early 1970s in parallel with the expansion of the Norwegian welfare state (Figure 5). Thus, during this time fish farming morphed from being a supplementary agricultural occupation into a major export business, based on the close cooperation between governmental officials, research institutes and the seafood industry. As fishing – and overfishing – has continued, Norway has become Europe's largest supplier of fish and fish products, of which about 95 percent is exported globally to around 150 countries.[29]

Although Norway has exported fish from the time of the Hanseatic League (a mediaeval commercial and defensive confederation of merchant guilds and market towns), the industrialised scale of animal production has catapulted both hu-

26 Helena Ruotsala, "Porot, porokoirat ja ihmiset samoilla palkisilla," in *Kanssakulkijat: Monilajisten kohtaamisten jäljillä*, ed. by Tuomas Räsänen and Nora Schuurman (Helsinki: SKS, 2020), 234–255.

27 Franklin, *Animals and Modern Cultures*, 128–129.

28 See also Weis, *The Ecological Hoofprint*, 81–82.

29 Lars Thue, "Norway: a Resource-based and Democratic Capitalism," in *Creating Nordic Capitalism. The Business History of a Competitive Periphery*, ed. by Susanna Fellman, Martin Jes Iversen, Hans Sjögren and Lars Thue (Basingstoke: Palgrave Macmillan, 2008), 398, 477–483.

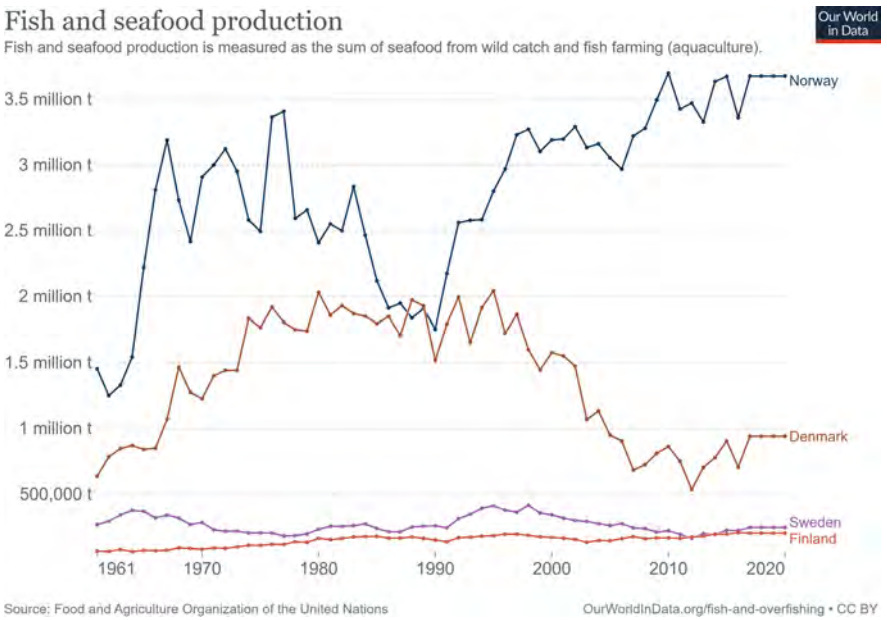

Figure 5: Fish and seafood production in Denmark, Finland, Norway and Sweden, 1961 to 2020. Source: Hannah Ritchie and Max Roser, "Fish and Overfishing," last modified October 2021, accessed September 27, 2023, https://ourworldindata.org/fish-and-overfishing. CC BY 4.0.

mans and animals into an entirely different situation.[30] Hence, at present industrial logic and processes determine and shape the lives of food animals from the moment of birth to the time of slaughter. This is due to matters, such as breeding, feeding and medical treatment, having been modified and adapted to support industrial needs. For societies that produce and consume animals in large numbers, animals themselves and the lives they (do not) lead are often well-hidden from public gaze. An industrial animal is most visible to people at the end of the industrial process – as a product to be bought and consumed. When and if the daily life of animal industries is made visible, for example in social media, it is often to confirm the position of animals as commodities.

In the face of this separation of consumption from production and processing, interdisciplinary research on animal industries plays a crucial role in showing how the exploitation of animals came to be what it is in the contemporary world. In particular, there is a need for detailed and comprehensive historical analysis of this development and the changes it involved in comparison to prior

30 See also Otter, "Eating Animals," 487–488.

uses of animals. Moreover, historical analysis shows that the industrial development of animal agriculture was not a clear-cut path; instead, it involved a set of complex practices that evolved in relation to their own time and therefore have to be situated in their respective historical contexts.[31] Finally, by providing a better understanding of changes and continuities, research can also create means to address present-day exploitation as an alterable phenomenon. This is also of vital importance in the case of the Nordic countries, which are often associated with having adopted progressive animal welfare legislation of a high standard and comprehensive animal rights.[32] Although one may argue that the growth of animal industries has contributed to the progress of the Nordic welfare regime, it is a different question when contemplating the nature and impact of this development on other animals than humans.

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Although the history of animal industries and the relationships between humans and farmed animals have been examined in some recent studies, these books mainly focus on the US context, or their scope on the historical changes is limited.[33] However, if we want to understand current problems, it is essential to be aware of long-term changes and continuities, as well as the diversity of animals that have been exploited, including fish, who are often neglected. The purpose of this book is to explain these changes in the context of the Nordic countries.

The contributors to this book represent different fields of research, including history, ethnography, geography, the social sciences and literary research. As such, the book offers a multidisciplinary approach to Nordic aspects regarding animal industries and exploitation. The chapters also examine a variety of animal species used on an industrial scale, such as cattle, pigs, poultry and fish. The book project has taken its point of departure from Human-Animal Studies (HAS), a multidisciplinary field focusing on the different aspects of human animal relationships, as well as the symbolic, practical and material effects that other animals have in our societies. In HAS, animals are understood as co-constructors of histories, cultures and societies together with humans and they are seen to have social relevance in cultural and historical processes.[34] HAS may be understood in connection with

31 See also Woods, "Rethinking the History of Modern Agriculture," 165–191.

32 See, for example, Silbergeld, *Chickenizing Farms & Food*, 105.

33 See, for example, Joshua Specht, *Red Meat Republic: A Hoof-to-Table History of How Beef Changed America* (Princeton, NJ: Princeton University Press, 2019); Erin McKenna, *Livestock: Food, Fiber, and Friends* (Athens, GA: The University of Georgia Press, 2018); Fitzgerald, *Animals as Food.*

34 Erika Andersson Cederholm, Amelie Björck, Kristina Jennbert and Ann-Sofie Lönngren, "Introduction," in *Exploring the Animal Turn. Human-Animal Relations in Science, Society and Culture,* ed. by Erika Andersson Cederholm et al. (Lund: Pufendorfinstitutet, 2014), 5–6; Philip

posthumanist and new materialist theoretisation, which have shaken the human-centred premises of social sciences and humanities in recent decades.[35] However, to do justice to the richness of different perspectives and varying theoretical frameworks, through which to examine the topic, define concepts and interpret phenomena in this vast multidisciplinary field, no single stance is shared by the authors. Rather, our book deliberately aims to highlight the multiplicity and complexity of this topic, which cannot be met with a magic cure-all doxa for all issues related to the study of animal industries.[36]

The book has three distinct parts each of which focuses on different aspects of animal industries and their effects on various animal species. The first part, entitled "The onset of animal industries," concentrates on the early decades of animal industries and how they developed in relation to transnational and national spheres in the late nineteenth and the early twentieth centuries. It shows in detail how different practices and ideas proceeded to support the ever-growing use and consumption of animals and animal-based products in the Nordic countries.

The first chapter focuses on breeding and on the transnational mobility of breeding animals. The historian Taina Syrjämaa examines this central phenomenon of modernising animal husbandry from a Finnish perspective and shows how quite a limited number of animal individuals were at the very centre of a fundamental transformation of not only Finnish agriculture, but also the entire society of the country. The chapter traces how breeding animals, especially dairy cattle, were translocated to and acclimatised in Finland between the 1860s and 1880s and how their foreignness was perceived by contemporaries. These presumably high-rank animal individuals were acquired to increase animal productivity by cross breeding. This was not only expected to guarantee sufficient food supply for the human population, but it was also envisioned as a means to create opportunities for entering and competing within international markets. The Finnish case shows how even slowly industrialising countries and regions avidly participated in transnational networks of animal business.

Armstrong and Laurence Simmons, "Bestiary: An Introduction," in *Knowing Animals*, ed. by Philip Armstrong and Laurence Simmons (Leiden: Brill, 2007), 2; Kenneth Shapiro, "Human-Animal Studies: Remembering the Past, Celebrating the Present, Troubling the Future," *Society & Animals* 28 (2020): 797–833, accessed September 8, 2022, doi: 10.1163/15685306-bja10029.

35 See Francesca Ferrando, "Posthumanism, Transhumanism, Antihumanism, Metahumanism, and New Materialisms. Differences and Relations," *Existenz* 8 (2013): 26–32.

36 On the complexity and messiness of the entanglements of human beings and other organisms, and, consequently, the need to approach these issues without moral absolutes or a "final solution," see also Donna Haraway, *When Species Meet* (Minneapolis: University of Minneapolis Press, 2008), 80, 105–106.

In her chapter, Taija Kaarlenkaski begins from the fact that the level of milk consumption in Finland is the highest in the world and explores the background of the Finnish fascination with milk and milk products. Drawing from cultural studies and new materialist thought, she investigates the discourses that describe milk as nutrition, and the promotion of milk consumption from the late nineteenth century to the 1930s. She argues that milk promotion in Finland was part of an international phenomenon, connected to the development of science, technology and urbanisation. In the early twentieth century, increasing milk consumption was seen as a solution to solving the nutritional deficit of the impoverished part of the population in Finland. This was a phenomenon experienced by many other countries at this time. Moreover, the appreciation of milk was discursively intertwined with civilisation and nationality. By increasing milk consumption, Finland could join the group of civilised Western countries, and combining milk with health, wellbeing and strength in the promotional materials contributed to the project of nation building in a relatively new state.

The historian Marja Jalava explores in her chapter pig fattening performance testing in the first part of the twentieth century. These tests formed an important part of the transformation of Finnish swine husbandry from subsistence farming to an animal industry with its related changes in pig–human relationships. As the chapter shows, feeding tests made significant contributions to the development that ensured that the pigs, who were accustomed to a relative degree of free movement and who were largely self-reliant, were placed under meticulously controlled conditions. This made them industrialised organisms, who were manageable and measurable research objects, as well as tools of the trade. At the same time, however, their individuality, cognitive skills and need for proper care were emphasised by swine husbandry experts so as to improve their traditionally low status as farmed animals. According to Jalava, swine thus had an ambiguous and shifting position, as swine farmers and agricultural experts constantly negotiated a fine line between pigs as sentient beings and as mere commodities.

In her chapter, the literary scholar Helinä Ääri analyses Finnish egg farming guides that were published between the 1910s and 1930s and targeted at small-scale family farmers, who were encouraged to increase the economic profitability of poultry keeping. Of special interest in her reading of these guides is the interplay between the exploitation of chickens and the practices of human–avian love and care, which were entangled with such categories of difference as gender, species, age and functional capacities. The incipient egg industry increased the agency of women, for commercial chicken keeping was considered to be an especially well-suited supplement to their diverse domestic chores. As Ääri points out, however, the growth of poultry farming among female farmers was accompanied by violence being meted out to chickens and sexism towards the hens. Ultimately,

neither the farmers nor the chickens were seen as beings with intrinsic value, for they were both subjugated to the alleged needs of a young nation state.

The second part, "Increasing efficiency, intensifying problems," not only highlights the various practices developed and utilised by animal industries in order to intensify production in the Nordic countries, but it also underlines the problematic outcomes of intensified, commodified animal production. It shows how growing scientific knowledge has both increased efficiency of animal industries by introducing scientific advancements (e.g., antibiotics, nutritional data), but also questioned large-scale exploitation by providing new knowledge about animals as sentient, conscious beings.

In his chapter, the historian Tuomas Räsänen investigates the efforts to curb the decline of fish stocks that have occurred as a result of intensified industrial fishing in the latter part of the twentieth century. He focuses on the drafting and implementation of the Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and the Belts (Gdansk Convention), signed in 1973. This was simultaneously the first attempt to regulate Baltic fisheries and the first international agreement that included all Baltic Sea states as signatories. Ultimately, the convention was almost a total failure. Räsänen argues that this failure stemmed from three factors: territorial waters were excluded because of Cold War hostilities, states prioritised their national fisheries at the expense of fish populations, and, finally, fish were merely perceived in the convention as a living raw material without any ethical or ecological value. Consequently, the industrialisation of the Baltic Sea fisheries and overfishing continued unabated.

In their chapter, the historian of science and technology Terje Finstad and the historical sociologist Eirik Magnus Fuglestad examine Norwegian debates on antibiotics since the 1950s from the perspective of science and technology studies. They reveal large-scale transformations in "agro-human orders," which took place due to the use – and abuse – of antibiotics in animal husbandry. The new microbial worlds and human attempts to control them implied new roles for animals, humans and institutions. Finstad and Fuglestad analyse the dynamicity of views and roles when the introduction of antibiotics initially seemed to allow for human control of microbial worlds in and around animal bodies and to increase productivity. Nonetheless, they demonstrate that unexpected and unwelcome forms of resistant bacteria emerged over the longer term that threatened, for example, the global reputation of Norwegian aquaculture.

In her chapter on contemporary chickens (and their eggs), the geographer and specialist in more-than-human studies Catherine Oliver focuses on who has been and who continues to be exploited on a mass scale. Oliver locates her analysis in the context of capitalism and compares chicken metabolism to labour. She examines how the metabolic processes of chickens have been moulded and controlled

by humans. She does this initially by providing a global perspective and then proceeds to demonstrate how the imported broiler, a chicken capable of rapid growth, was raised for meat and came to supplant traditional chicken breeds in the Nordic countries. Furthermore, Oliver shows how human dietary demands have been used to justify the industrialisation of chicken metabolisms. Interestingly, she shows that recently the mass exploitation of chickens has been validated in the Nordic countries through the use of a greenwashing argument that claims that consuming chicken – instead of other types of meat – is more sustainable.

In his chapter, the cultural historian Otto Latva studies how the sentience, consciousness and agency of fish have been understood in Finnish public discussion of fish farming. Latva explores how fish farming, both to supply natural fish stocks and to breed fish for human consumption, have developed in Finland, as well as how people have described fish in this context from the late nineteenth century to the present day. He also demonstrates how the mental abilities and agency of fish have been explained in these discussions. For instance, he points out that when representatives of the fish industry discuss fish farming – understood as either the need to augment the wild fish population or to produce food for humans – they have had a huge impact on the ways in which the intelligence and agency of fish have been comprehended in the public discussion.

The third part of this book, entitled "Meaning-making for consumption," addresses how animal industries have supported, guided and promoted consumption practices of animal-based products in Nordic societies. This section illustrates how an increase in consumption has been an integral part of the strategic agenda of animal industries and, what is more, to accomplish this industries have been active in establishing and solidifying their place in consumer markets and in Nordic societies at large.

In Chapter 9, the cultural historian Karen V. Lykke and the rhetorical scholar Kristian Bjørkdahl offer a case study of The Meat Information Office, a Norwegian marketing agency that has actively promoted meat consumption since its establishment in 1933. Based on a study of archival material, such as advertisements and annual reports produced by the agency itself, they illustrate how the marketing agency, funded by an excise tax paid by the meat producers themselves, increasingly came to shape consumers' views about animals and meat from the 1950s up to the present day. Its primary purpose for decades has been to increase meat consumption. With this goal in mind, it has successfully established a position in Norwegian society by being present in different public spheres, such as in education and the media. Lykke and Bjørkdahl argue that the presence and activities of The Meat Information Office created a consumer who was (and remains) detached from the realities of meat production. This has deepened the separation between the production and consumption of meat in Norway.

Next, the historian Matti O. Hannikainen examines how Finnish scientific texts from the late nineteenth century until the late twentieth century have valued different fish species. The key analytical concept Hannikainen uses is "trash fish." Texts from the early years of those he studies only define a few fish species that were unsuitable for human use. However, the emphasis on economy of scale and the development of professional fisheries during the twentieth century transformed many formerly valued species into trash fish that deserved nothing but obliteration. This left only a handful of species who were deemed to be important from a human point of view, the most appreciated of whom were members of the *salmonidae* family. However, with the advent of environmental thinking and the trend towards sustainability in the late twentieth century, scientists and fishery managers have again tried to paint some "trash fish" as unused natural resources.

In Chapter 11, the historian Karin Dirke investigates how the idea of a "happy cow," displayed in the marketing of dairy and meat products, emerged in Sweden. Dirke demonstrates how this idea developed and how it has little to do with the actual happiness of cows. She argues that the idea emerged from different contexts, including the agricultural industry, the interest of the Swedish state to support farmers and the emerging demand in western countries for animal welfare. At the centre of Dirke's text is a critique offered by the novelist Astrid Lindgren, together with the veterinarian Kristina Forslund, who both participated in the debate on animal welfare in the mid-1980s.

Continuing the discussion vis-à-vis the public representation of cattle, Tobias Linné, in the penultimate chapter, critiques the appearance of Swedish agriculture and farmed animals in social media and questions the supposition that farmers posting updates about life at the farm would add a new perspective to the communication strategies of the official media of animal industries. Taking his starting points from critical animal studies and media studies, he explores how animals are ontologised as consumables and how the ethical and environmental problems embedded in the production and consumption of animal products are addressed or downplayed. Linné argues that on one level, social media accounts represent farmed animals as individual subjective beings; the very thing that animal rights activists often demand that the media should be doing. He points out, however, that this personalisation and individualisation may take on another meaning, one that works to further enable the exploitation of animals.

In the final chapter, Carin Martiin provides a long-term analysis of the industrialisation of Swedish dairy farming over the past 150 years. She utilises the viewpoints of agrarian history and examines the dramatically changed scale of maintaining dairy cattle and analyses the reasons that have influenced this transformation from the late nineteenth century to the early twenty-first century. In her chapter, dairy cattle are not only analysed as a part of food production, but

also a number of motives are examined. These motives range from individual thoughts and needs, to cultural and social explanations, and to more overarching societal economic and political views. Martiin shows that the principal forms of keeping dairy cattle have changed in different directions over time since the late nineteenth century. At the moment, we can see an almost complete dominance of large-scale dairy farming. One principal reason for this is due to a technical leap in the form of automatic milking and other digital tools. New cowsheds, technologies and practices of cattle tending have almost completely changed the character of a typical Swedish dairy farm. Although circumstances and timing may vary in different Nordic countries and according to the animal species, there are significant similarities in the processes of industrialisation of animal production.

The epilogue points out that animal industries are in many ways highly problematic. As their historical roots extend much further than factory farming, it is essential to grasp the long-term development of these phenomena. Yet it is as important to acknowledge that animal industries have not grown as a self-evident, automatic process, but that they have been in many ways intertwined with such huge and complex phenomena as nationalism, the expansion of industrial capitalism and the over-all modernisation of societies, as well as being actively lobbied for by various private and public actors. While humankind pays the collective price of animal industries in such forms as climate change, declining biodiversity, zoonoses, antibiotic resistance and the global obesity epidemic, ultimately other animals are those who are the primary sufferers.

Part I: **The onset of animal industries**

The first four chapters of this book examine the onset of animal industries and the early decades of their development in the late nineteenth and the early twentieth centuries. The chapters take their point of departure from history, cultural studies and literary studies, and together they show in detail how diverse transnational and national practices and ideas regarding the use and consumption of animals and animal-based products were developed and put into action in the Nordic countries.

The writers of these chapters trace developments that could be regarded as the early stages of the intensification in animal production, meaning, practices and ideas. These chapters indicate how it was made possible and necessary for Nordic societies to increase the use and consumption of animals and animal-based products. Consequently, animals and the societies exploiting them were incorporated into the industrial production system. These exploitative practices and ideas developed and intensified in subsequent decades and led to massive scale animal industries that are commonplace in the present day.

In Chapter 1, Taina Syrjämaa examines the transnational mobility of breeding cattle and shows how ideas and plans to increase animal productivity and to enter international markets were embedded into the activities of translocating animals in the late nineteenth century. The bodies and lives of these imported, high-yielding breeding animals were central to animal husbandry, the practitioners of which wished to intensify its production. The increased use of animal-based products required not only more high-yielding animals, but it also demanded the establishment of new consumption practices. In Chapter 2, Taija Kaarlenkaski traces the promotional campaigns undertaken in Finland in the late nineteenth and early twentieth century to increase the consumption of milk. As the intensifying production led to growing amounts of milk that had to be sold, the product was promoted as a healthy drink that tackled nutrient deficiencies and served the purpose of creating a strong, civilised nation state.

The processes of animal industries demanded more productive animal bodies, and in Chapter 3 Marja Jalava focuses on pig fattening performance testing in interwar Finland. The testing of pigs increased the means of regarding pigs as standardised and industrial objects that were consistent with the ideals of national self-sufficiency and served the needs of export markets. Despite the low level of agricultural industrialisation at the time, the efforts to commodify pigs into objects of trade were actively pursued. Economic aspirations are also at the core of Helinä Ääri's chapter, which examines the efforts taken in early twentieth-century Finland to increase the economic profitability of poultry keeping in small-scale farms. Both the farmers and the chickens were given primary value as profitable and productive units that improved the standard of living in the young nation state.

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Each chapter highlights the early stages of intensification in animal production, but with different perspectives and methods and with a variety of exploited animals; namely, cattle, pigs, and poultry. Together, all four chapters also show how the onset of animal industries collides with other major transformations of their time, such as the development of science and technology, urbanisation, nationalism, modernisation, the growth of capitalism and commercialisation. As such, they demonstrate the complexities of animal industries that were ever-present features of this modern embodiment of animal farming.

Taina Syrjämaa

1 Multispecies mobilities and human belief in progress

Introduction

In the beginning of August 1862, when an exceptionally rainy and cold Finnish summer was gradually turning towards autumn, 55 cows and bulls, almost as many sheep as well a number of pigs, chicken, geese and even peacocks disembarked in Helsinki after a sea voyage on board the British steamer *The Albion*. They had been acquired in Scotland at the Finnish Senate's expense and selected and escorted by two men: Henry Gibson, himself a native Scotsman and one of the first state agronomists in Finland, and R. M. Fieandt, the head of a new agricultural school situated in Central Finland. The arrival proved to be a special event attracting curious spectators in the capital city of the Grand Duchy of Finland and, via printed media, the news of the event circulated elsewhere in the country.[1] The farm animals were soon to continue their journey from the coastal city to inland areas and after having become accustomed to the Finnish climate, soil and feed, they were to establish themselves in agricultural schools and manors where it was envisioned that they would predominantly help to establish cross-breed offspring. As native farm animals were considered to be of little value in terms of productivity, the newcomers, such as Ayrshire bovines and Oxford Down sheep, were hailed as harbingers of progress.

Progress was a highly ambiguous but very influential concept, which consolidated the belief in human ability and right to overcome nature. It connected human wellbeing to material prosperity and to the expectation of continuous growth.[2] In this anthropocentric mindset, nonhuman animals fulfilled the role of serving humans on their destined path towards a supposedly wealthier future. Farm animals as producers of raw material for various industries, not least for the food sector, held a most important but subordinated place in this system. This

1 Anon., "Veckan," *Helsingfors Tidningar*, August 4, 1862, 1; Anon., "Parempaa karja-lajia," *Tapio*, August 9, 1862, 1; Anon., "Kotomaalta," *Sanomia Turusta*, August 8, 1862, 1.

2 Jeremy L. Caradonna, *Sustainability. A History* (Oxford: Oxford University Press, 2014), 55–57, Taina Syrjämaa, *Edistyksen luvattu maailma. Edistysusko maailmannäyttelyissä 1851–1915* (Helsinki: SKS, 2007).

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is an unfortunate legacy of the nineteenth century, which brought about factory farming in the twentieth century and that still underpins the current global crisis.

The human attempt to mould nonhuman animals has age-old roots, but more systematic breeding started in the late eighteenth century and became established during the nineteenth century. This process influenced practically all domesticated animal species. In their study on the millennial history of cattle, Felius et al. highlight the crucial importance of modern breeding by stating that the last 250 years have been "the most dynamic period in the evolution of cattle."[3] In her study on the mobility of livestock breeds in the British empire, Rebecca Woods has emphasised the centrality of breeding in modern animal husbandry. She has pointed out how, "the process of commodification [. . .] begins with reproductive control: the tactics of selection employed by breeders in the nineteenth century were undertaken, always, with the whims of the market in mind."[4] Animals' bodies and characteristics were systematically modified to better serve human purposes and to increase human wealth, thus enabling the gradual intensification of animal exploitation in the modernising and industrialising world.

The nineteenth century witnessed a boom in the transnational mobility of both humans and animals, and an intensification of ever denser and wider networks.[5] Due to new technologies, it became profitable to transport animals in growing numbers over long distances, even across oceans. Whilst countless farmed animals were transported to be slaughtered upon arrival, a more limited number of animals that were intended for breeding were expected to establish themselves in the new environment.[6] The motley group of animal individuals landing on board *The Albion* in Helsinki, formed part of a huge contemporary phenomenon that reshaped animal breeds and animal geographies.

Breeding and the translocation of farm animals were not only human cultural practices, but also complex multispecies interactions and entanglements. Oxley Heaney et al. have recently demanded that more attention be paid to "otherthanhuman-animal immigrants," who are "able to fulfill human needs or become an unwitting transgressor of social and political desires, fears and conflicts."[7] Indeed, it is very

3 Marleen Felius, Marie-Louise Beerling, David S. Buchanan, Bert Theunissen, Peter A. Koolmees and Johannes A. Lenstra, "On the History of Cattle Genetic Resources," *Diversity* 6 (2014): 737, accessed June 17, 2022, doi:10.3390/d6040705.

4 Rebecca J. H. Woods, *The Herds Shot Round the World. Native Breeds and the British Empire, 1800–1900* (Chapel Hill: The University of North Carolina Press, 2017), 14.

5 Jürgen Osterhammel, *The Transformation of the World: A Global History of the Nineteenth Century* (Princeton: Princeton University Press, 2014), 712–724.

6 Woods, *The Herds*.

7 Sarah Oxley Heaney, Kristine Hill, Michelle Szydlowski, Jes Hooper and Thomas Aiello, "Members only? A Posthuman View of Otherthanhuman-Animal Immigrants across Human-Defined

well known in agricultural history that some breeds became extremely popular and influential internationally. This obviously required transnational animal mobility. Yet, these "otherthanhuman immigrants" have mostly remained outside research foci. This chapter explores them in the Finnish context. It examines why, how and with what kind of consequences breeding animals were translocated.

The chapter shows how a small number of animal individuals and their mobility were at the very centre of the process of modernisation of animal husbandry and consequently of the entirety of Finnish society from the early 1860s. The process was temporarily halted during the severe years of famine in the late 1860s, but gained strength and witnessed the breakthrough of animal husbandry that coincided with a transition to monetary economy in the 1870s and 1880s,[8] which is also the time span of this chapter. As Finnish animal husbandry was centred on dairy cattle at this time, they are in the limelight more than other farm animal species in this chapter. Furthermore, this chapter showcases how even a relatively late industrialised country – the pace of industrialisation started to accelerate in Finland only in the 1870s – wished to intensify animal productivity not only to secure the survival of the national human population but also to enter world markets.

This research draws from animal history and multidisciplinary human-animal studies and is based on the premise that all living and all societies are inevitably multispecific.[9] Species are by necessity interdependent and all human and nonhuman agencies are interrelated and relative.[10] Despite human power to enforce animals to move and to die and even being able to mould their bodies and characteristics by breeding, humans were – and are – also dependent on animals, eventually on specific animal individuals with their particular lives.

The chapter is based on qualitative historical analysis of a variety of sources, which consists of reports, including statistics and records of the discussions in national agricultural meetings, and sources connected with the two most influential contemporary mass media: national and international exhibitions and newspa-

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Borders," *Trace. Journal for Human-Animal Studies* 8 (2022), accessed August 15, 2022, doi.org/10.23984/fjhas.110811.

8 Teppo Vihola, *Leipäviljasta lypsykarjaan. Maatalouden tuotantosuunnan muutos Suomessa 1870-luvulta ensimmäisen maailmansodan vuosiin* (Helsinki: SHS, 1991); Teppo Vihola, "Pärjääkö pienviljelys?," in *Suomen maatalouden historia* II, ed. by Matti Peltonen (Helsinki: SKS, 2004), 157–178.

9 Susan Nance, "Introduction," in *The Historical Animal*, ed. by Susan Nance (Syracuse, NY: Syracuse University Press, 2015), 1–16; Donna Haraway, *When Species Meet,* (Minneapolis: University of Minnesota Press, 2008).

10 Vinciane Despret, "From Secret Agents to Interagency," *History and Theory* 52 (2013), 29–44; Tuomas Räsänen and Taina Syrjämaa (eds.), *Shared Lives of Humans and Animals. Animal Agency in the Global North* (London: Routledge, 2017); Tuomas Räsänen and Nora Schuurman (eds), *Kanssakulkijat. Monilajisten kohtaamisten jäljillä* (Helsinki: SKS, 2020).

pers in Finnish and Swedish. Nineteenth-century Finnish newspapers have been comprehensively digitalised, thereby enabling various searches whilst exhibition documentation is typically highly fragmentary.

The first section of the chapter presents the crises of grain growing and the rising interest in animal husbandry and breeding and traces the cultural and natural environment that awaited animals upon arrival in Finland. The second section examines the practices of acquiring breeding animals and their translocations. The final section focuses on questions of pure versus cross breeding of imported animals and the changing evaluations of their foreignness.

Interest in intensifying animal husbandry awakens

Foreign farm animals were rarities, albeit not totally unknown in Finland at the time of the arrival of the animal passengers of *The Albion*. During the previous century, the gentry had acquired sheep of German, English and Spanish origin, for example, as well as some Dutch and Holstein bovines. In the late 1840s, the Finnish State started to import Ayrshires, Pembrokes and Voigtland cattle, but the practice was disrupted due to an outbreak of cattle plague in the 1850s. It has been counted that 121 bovines were imported between 1847 and 1850, of whom the majority were Ayrshires.[11] The loss of pedigree animals due to epidemics was a bitter setback. In the oldest agricultural school, Mustiala, which was founded and run by the Finnish Economic Society, for example, it was seen that the loss was so damaging that it could be covered only gradually.[12]

Finland, where the breeding animals arrived, was predominantly a smallholders' country in which households strived for self-subsistence. Resources for major investment and the capability to seize on novelties in agriculture and animal husbandry were limited to sparse manor houses and scattered vicarages. Traditionally Finnish agriculture relied on grain production and a human diet that was linked to bread consumption: 70 percent of daily energy needs were still sat-

11 Arvo M. Soininen, *Vanha maataloutemme. Maatalous ja maatalousväestö Suomessa perinnäisen maatalouden loppukaudella 1720-luvulta 1870-luvulle*, (Helsinki: SHS, 1974), 239–242; Anneli Mäkelä-Alitalo, "Karjataudit ja eläinlääkintä," in *Suomen maatalouden historia* I, ed. by Viljo Rasila, Eino Jutikkala and Anneli Mäkelä-Alitalo (Helsinki: SKS, 2003), 596. See also Anon., "Officiella Kungörelser," *Finlands Allmänna Tidning*, March 8, 1847, 3; Anon., "Skonerten Henriette," *Åbo Tidningar*, September 1, 1848, 2.

12 Anon., "Kejs. Finska Hushållningssällskapet," *Helsingfors Tidningar*, January 31, 1857, 3.

isfied by the consumption of bread in the 1860s and 1870s.[13] In Southern and Western Finland, animals were kept to produce manure for grain fields, or for their pulling power. In the eastern regions, where slash and burn agriculture was dominant, animals – and manure – were needed even less.

The number of animals who were kept alive all year round was quite limited. An example of the scarcity of resources was the common practice to kill newborn calves as they were considered more of a burden than being of any use.[14] Severe winters restricted the number of animals who could be maintained. Farm animals needed, for example, shelter against the cold in winter. Even sheep, which in most other parts of Europe could roam outdoors around the year, needed to be housed in a shed in Finland. The biggest problem, however, concerned feeding. Even in the wealthiest regions of the country, the feed for animals was not nutrient-rich hay cultivated in the fields. Instead, it consisted of various wild plants and branches and leaves gathered in meadows and woods. Cultivating hay in fields was an unfamiliar and unattractive idea. It was deemed to be a waste to use precious fields to produce feed (hay) for animals and not food (grain) for humans. The agricultural historian Teppo Vihola has noted that traditional Finnish animal husbandry was in fact comparable to animal cruelty because of the starvation they endured.[15] Yet, it must be acknowledged that their human owners also regularly faced hunger and when crop failures were not so rare, many starved to death.

In the traditional agricultural system, a rise in food production was only achieved by clearing more fields. However, it was not logistically possible to cultivate ever larger areas efficiently. For example, the manure needed to fertilise the fields was lacking due to poorly-fed animals producing very little of anything, even of manure.[16] Thus, Finnish agriculture based on grain growing was caught in a vicious circle. Although animal husbandry did not appear lucrative for peasants because of the dilemma of feed, agricultural modernisers began to promote it. They viewed animal husbandry as a way to break out of the prevailing poverty and as a crucial key to more productive agriculture. One such agricultural moderniser was the state agronomist Henry Gibson.

A year before Gibson set off to Scotland to acquire farm animals from among a number of species, he arranged for the publication of a manual on animal husbandry in Finnish, which was the language of the peasant population. It would be

13 Vihola, "Pärjääkö pienviljelys?," 157. See also Kirsi Laine, *Maatalous, isojako ja talonpoikainen päätöksenteko Lounais-Suomessa 1750–1850*, (Loimaa: Suomen maatalousmuseo Sarka), 269–274.
14 Vihola, "Pärjääkö pienviljelys?," 101–106.
15 Vihola, "Pärjääkö pienviljelys?," 164.
16 See also Laine, *Maatalous, isojako*, 319–324.

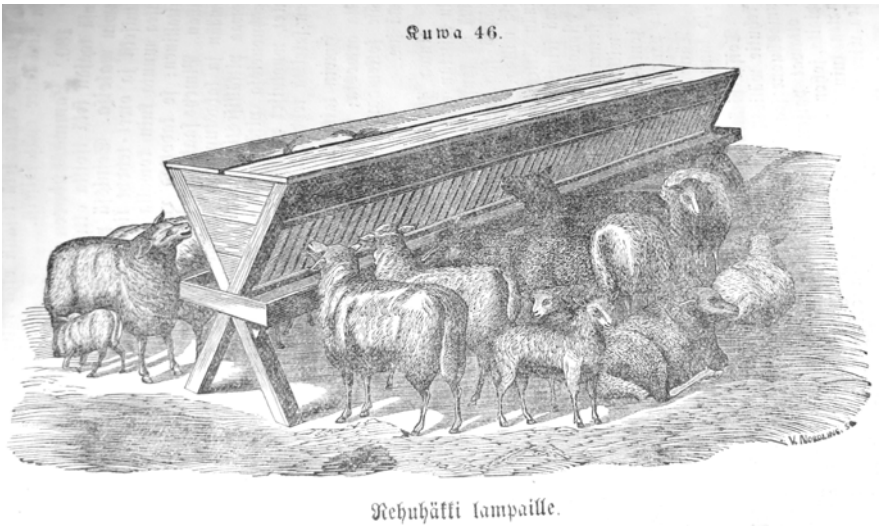


Figure 1.1: Instruction on how to efficiently feed sheep. Anon., *Lyhykäinen Oppikirja Karjan hoidossa*, (Hämeenlinna: G. E. Eurén, 1861), 102.

easy to imagine that in a country with a harsh climate and frequent crop failures, animal husbandry would have been sought after as a means to secure food for domestic consumption. However, Gibson reminded his readers early on that the work would open ways not only "to have healthy food" but also to "goods to export abroad."[17]

Finland was very far from being a serious rival in the international agricultural markets of the time, but Gibson referred to Switzerland and Tyrol as encouraging examples of how regions with challenging natural conditions had succeeded in cattle keeping. Gibson also referred to Swedish success in making grain production more profitable via the use of more efficient animal husbandry (and by reducing the use of grain for peasants' spirit distilling) and, thus, transforming the country from a grain importer to exporter.[18] The Swedish model was especially significant. Not only were the natural conditions similar to a great extent, but culturally and socially Sweden and Finland had fundamental similarities due to a shared history. Although Russia had captured Finnish territory from Sweden in a war in 1808 to 1809, the centuries-old Finnish-Swedish cultural, fam-

17 H[enry] Gibson, "Alkusana," *Lyhykäinen Oppikirja Karjan hoidossa*, (Hämeenlinna: G. E. Eurén, 1861), 4.
18 Gibson, "Alkusana," 3–5.

ily and business connections remained tight. The Swedish model was often sought after in nineteenth-century Finland. Moreover, Gibson himself had resided in Sweden before being recruited to work in Finland.

Many means existed vis-à-vis how to increase the profitability of animal husbandry: investment in feed cultivation, the dissemination of information, and, in order to commodify milk, the acquisition of hygienic tools and learning new methods of production. All these methods were used by the Finnish Economic Society and by a number of more recently established regional associations.[19] However, this did not suffice, but an essential change was expected of the animals themselves: they were to become more productive.

In principle, the intensification of animal husbandry included any farm animal species – as shown by the numerosity of species imported in Finland at one time in August 1862. There were fluctuating attempts to develop the breeding of sheep and pigs or meat cattle. Yet, in practice the emphasis became fixed on dairy cattle and they became the most significant farm animals in economic terms. According to the contemporary estimations of the authorities, Finland was reported to have exported circa 1.5 million kilos of butter by sea in the early 1860s and this quantity was growing.[20] Historians have, however, noted, that at this stage, the growth in exports was not due to an increase in production. Because of the dire economic climate, butter was not consumed domestically but sold abroad. In any case, Finnish butter was far more competitive than the products generated from Finnish fields. Butter was produced in small quantities by peasants and gradually in a more systematic and technically more advanced manner in manors. Thanks to the availability of ice, dairy products could be stored and as butter was expensive compared to its weight, it was worth transporting over long distances. The production and export of butter did eventually boom at the turn of the 1870s and 1880s, but by this time dairy production systems – and the cattle and cattle accommodation – had been altered.[21] In the mid-1870s, parallel to the growth in total exports due to the emergence of the timber industry, the exportation of butter – to Russia, Sweden and Great Britain – formed approximately 12 percent of all Finnish exports.[22] The

19 Jari Niemelä, *Lääninlampureista maaseutukeskuksiin. Maaseutukeskusten ja niiden edeltäjien maatalousneuvonta 1700-luvulta 1990-luvulle*, (Tampere: SHS and Maaseutukeskusten Liitto, 1996), 85–90.

20 *Suomenmaan virallinen tilasto* II. *Yhteenveto kuvernöörien viisivuotis-kertomuksista vuosilta 1861–1865*. (Helsinki, Keisarillisen Senaatin kirjapaino, 1868), 6.

21 Soininen, *Vanha maataloutemme*, 243–248; Vihtola, "Pärjääkö pienviljelys?," 158; Matti Peltonen, "Uudet kaupallistumisen muodot," in *Suomen maatalouden historia II*, ed. by Matti Peltonen (Helsinki: SKS, 2004), 92–107.

22 K. E. F. Ignatius, *Suomen suuriruhtinaskunta. Tilastollisia tietoja Suomen ensimmäisen yleisen näyttelyn Helsingissä johdosta 1876* (Helsinki: Hufvudstadsblad'in kirjapaino, 1876), 42.

sale of dairy products offered opportunities to earn money for the people in the countryside and notably to women who usually managed the processing of milk. Thus, it became an important force in the gradual shift from self-subsistence to monetary economics.[23]

In global terms, the decades from the 1860s to the 1880s witnessed an intensification in the industrial exploitation of farm animals. Branded industrial meat production boomed when the supply of raw materials – animal bodies – became abundant and continuous. At the time the famous – and later infamous – massive slaughterhouses in Chicago were the hallmark of the new era in the 1860s. During the following decade it became possible to export frozen meat across oceans from the Americas, Australia and New Zealand to Europe.[24] Although sparsely-populated Finland, with its small farms and dramatic years of famine, may at first glance seem to be far from the core hubs of the industrialising animal business, references to entering world markets with products of animal origin kept appearing in the Finnish media at this time. Some even dreamt of selling meat in the huge markets of Britain.[25] The enlarging markets were lucrative, but also highly competitive. Animals were required to produce more in order to be profitable, and here breeding and acquiring excellent breeding animals abroad became the focus of attention.

Breeding animals on the move

During the late eighteenth and early nineteenth centuries cattle breeding gained momentum, especially in Great Britain. Local stocks were gradually established as "breeds" and started to enjoy excellent reputations abroad, which in turn led to the growing transnational mobility of breeding animals sold overseas. Many practices connected to breeding, such as arranging shows and competitions as well as keeping heard books that registered pedigrees, also spread internationally.[26]

23 Peltonen, "Uudet kaupallistumisen muodot," 86–87, 89, 106–107.

24 Pierre Saunier, "Food Production: Industrial Processing Begins to Gain Ground," in *A Cultural History of Food in the Age of Empire*, ed. by Martin Bruegel, (London: Bloomsbury, 2016), 36–38; Osterhammel, *The Transformation*, 229–230; Joshua Specht, *Red Meat Republic: A Hoof-to-Table History of How Beef Changed America*, (Princeton: Princeton University Press, 2019); Amy J. Fitzgerald, *Animals As Food: (Re)connecting Production, Processing, Consumption, and Impacts*, (East Lansing: Michigan State University Press, 2015), chapters 2 and 3.

25 Anon., "Wielä kerran eläinten uloswiennistä ulkomaille," *Päivätär*, December 9, 1865, 1 and December 16, 1865, 2.

26 Harriet Ritvo, *The Animal Estate. The English and Other Creatures in the Victorian Age*, (Cambridge, MA: Harvard University Press, 1987), 46–81; Woods, *The Herds*, 16–18.

Especially productive dairy cattle hailed from Scotland and these breeds caught the attention of Nordic promoters of animal husbandry. Ayrshire, the rural home county of the most renowned milking cow breed, became an esteemed international centre of excellence in breeding attracting purchasers from abroad. Cities, where animal shows were regularly staged, also played an important role. Animals could be acquired there directly during the shows, which made these urban locations temporary hubs of breeding, whilst the prizes awarded in the shows functioned afterwards as quality labels for individual animals and for breeders' talents.

The Swedish veterinarian Johan Lindeqvist, who served as the state agronomist of Norway,[27] gave a detailed description of his endeavours in Scotland in selecting bovines and sheep for Aas Agricultural School in Southern Norway. His account appeared in an influential newspaper, published by the financial department of the Finnish Senate, where interest in similar moves was growing. During the summer of 1860, Lindeqvist had travelled around East Ayrshire on foot, by horse and by train looking for breeders who were well known in the region and who had prize-winning animals. He also visited cattle shows in Scotland and England, where he examined Ayrshires and a number of different sheep breeds. Eventually he selected 31 bovines and 14 Oxford Downs, 12 Cheviot, and three New Leicester sheep that were to be shipped to Norway.[28]

The logistical endeavour in transporting the livestock to Norway began in mid-August and first consisted of a near 24-hour train journey – with a break for feeding and milking – from New Cumnock in Ayrshire to Hull. A five-day voyage then ensued aboard a steamer to Drøback in Southern Norway, close to the capital city of Christiania (Oslo). Lindeqvist wrote that he had initially hesitated at transporting full grown cows as he feared their sensitive udders could be injured during "such a long and violent removal." He was, however, encouraged to select adults – in fact the oldest animal of the group was a seven-year-old cow named Hornie – and afterwards he was satisfied with his travel arrangements because all the animals survived.[29]

Steam technology made travelling more rapid and more foreseeable than before, yet journeys were tough and dangerous. Breeding animals were prized as investments and they were taken care of attentively, as owners were well aware

27 Dag Aanderaa, "Statsagronom Johan Lindeqvist," *Norsk biografisk leksikon* (Store norske leksikon 1999–2005), updated June 29, 2022, accessed September 5, 2023, https://nbl.snl.no/Johan_Lindeqvist.

28 Anon., "Om införskrifning af utländska afvelsdjur till förbättrande af den inhemska boskapracen," *Finlands Allmänna Tidning*, April 16, 1861, 2–3, April 17, 1861, 2–3 and April 19, 1861, 3.

29 Anon., "Om införskrifning."

of the risks of epidemics and tried to minimise injuries. Thus, hay and sawdust were spread on train wagon floors for Hornie and her fellow passengers. Moreover, aboard ship they travelled in stalls below deck, where there was no risk of being washed away in a storm. Despite such arrangements, the journey must have been an ordeal for animal passengers. Their travelling conditions were, however, in many ways vastly superior to those of other animals. This was particularly the case with regards to animals being transported for slaughter. They had to endure overcrowded vessels and many of them died before being slaughtered because of the hardships of transportation.

The cattle selected by Lindeqvist survived the journey to Norway, but there proved to be a dramatic epilogue: an outbreak of cow pneumonia soon led to their deaths. This happened despite precautions being taken by the state agronomist, which included not visiting Scottish farms known to be rife with the disease and having the train wagons washed with soap and treated with thick limewater before the animals embarked.[30] Afterwards, an official examination traced the origin of the disease to a Scottish cattle show that had taken place a few weeks before the cattle set off for Norway. The first cow to fall ill in Aas had been at a show where a disease carrier had also been present. The long incubation period made the disease undetectable until it was too late to avert an epidemic in Aas.[31] Animal mobility, whether due to temporary factors, such as visits to shows, or through permanent migration, was considered a prerequisite for developing the productivity of animal husbandry. However, it also entailed risks, such as the circulation of diseases.

Despite the sad outcome in Norway and previous domestic experiences of epidemics in Finland, there was a growing interest and demand among Finnish modernisers of agriculture to speed up the breeding process by buying high-rated animal individuals abroad. Apart from the dramatic years of famine, the Finnish State repeatedly arranged the importation of breeding animals, and not only from Great Britain. Such arrivals took place in July or August to allow time for the newly arrived animals to recover from the journey and to get used to the Finnish environment and feed before the hard wintertime. It was also a less dangerous season for crossing the sea, which could be stormy in the autumn. All marine traffic ceased too, it should be remembered, when the Northern Baltic Sea froze over.[32]

30 Anon., "Om införskrifning."

31 *Norges officielle statistik udgiven i aaret 1863. Beretning om sundhedstilstanden og medicinalforholdene i Norge i aaret 1861*, (Christiania: Departementet for den indre, 1864), 129–130.

32 The first Finnish steamship capable for winter navigation was launched in 1877. Aaro Sahari and Saara Matala, "Of a Titan, Winds and Power: Transnational Development of the Icebreaker,

Although Scotland continued to be an indisputable centre for the purchase of livestock breeds, animal geographies varied. Animal individuals were imported from Northern Germany, Denmark and Sweden, that is, from nearby regions that had a more prosperous tradition of animal husbandry and agriculture than Finland. Voyages from these places were shorter than those of the animals arriving from Britain, but still unavoidably entailed travel aboard a ship. Auction announcements and reports published in newspapers record such arrivals. In 1874, for example, 40 Southdown sheep from Sweden,[33] 22 Angler bulls and 68 heifers from Denmark and 12 Ayrshire bulls from Scotland all arrived in Finland.[34] The number of imported animals was usually restricted. For example, in July 1882 the British steamer *Salisbury* brought 12 bulls, three heifers and two pigs from Scotland to Hanko, wherefrom they continued by train to Helsinki to be auctioned.[35] Yet, large procurements were also possible. In July 1875, for example, 120 Angler bulls, 46 Ayrshire bovines and 40 Southdown sheep arrived in Finland. This seems to have been related to a temporary turn in bovine breed preferences.

As the example of British breeds of sheep and bovines imported to Finland from Sweden demonstrates, translocations were rarely straightforward single shifts from one place of origin to a final destination. Mobility partly took place over a number of generations, but also an animal individual could experience a number of displacements after shorter or longer stays. Most of these animals settled down in agricultural schools in different provinces, but some were auctioned to wealthy enthusiasts of animal husbandry and agriculture. For example, of the animals who landed in Helsinki in 1874, six bovines and five sheep were auctioned in the capital city. One of the wealthiest industrialists in the country, Axel Wahren, was among the buyers. He was also an eager agricultural moderniser, as was the noble manor owner Constantine Linder.[36] Both perfectly exemplify the social ranks of private owners of foreign-born breeding animals.

It is striking how small numbers of animal individuals were at the centre of auctions and the competition of bidders. To take another example: in August 1879 three auctions were arranged in the three largest towns in Finland to sell Ayrshires imported at the expense of the State. Four animals (three bulls and one heifer) were sold in Turku in southwestern Finland; three animals (two bulls and one heifer) were auctioned in the eastern city of Viipuri in Karelia, and seven ani-

1890–1954," *International Journal of Maritime History* 33 (2021), accessed August 15, 2022, doi.org/10.1177/08438714211062493.

33 Anon., "Elukoita," *Oulun Wiikko-Sanomia*, August 8, 1874, 2.

34 Anon., "Siittö-eläinten," *Suomalainen Wirallinen Lehti*, December 8, 1874, 1.

35 Anon., "Englantilainen höyry," *Sanomia Turusta*, July 13, 1882, 2.

36 Anon., "Vid boskapsauktionen," *Finlands Allmänna Tidning*, August 20, 1874, 1.

mals (six bulls and one heifer) were sold in Helsinki.[37] It is obvious that the purpose was not – and the resources would not have allowed – to have large pure bred cattle, but to improve productivity of native farm animals by crossbreeding.

Showcasing such small numbers of individuals indicates that these breeding animals were considered to be of extremely high importance. They were the living links who connected Finland to the most important and up-to-date global and regional centres of animal husbandry and who were expected to contribute to raising the country from poverty and hunger towards being a modern economy. No wonder that they were also willingly exhibited. In fact, "Finnish" Ayrshires had been displayed as early as 1860 in a large agricultural show in St. Petersburg.[38] Being able to exhibit them was seen as a proof of progressiveness and if not a proof of current wealth, then at least of future potential.

The value of an individual was, however, relative and subject to change. This is demonstrated by the case of a large exhibition in Moscow. In the first place, Finnish breeders were preparing to participate in it in 1881 by displaying pedigree farm animals in different categories. The exhibition, however, was postponed when Emperor Alexander II was assassinated. At this point, announcements about the sale of fine young bovines who had been intended to be displayed in Moscow appeared in Finnish newspapers.[39] Without the possibility to display them and to participate in competition for prizes, these animals were not considered to be worth maintaining but were sold. The following year, when the exhibition finally took place, Finnish breeders were again prepared to display pedigree bovines, sheep, horses and pigs. Many also received prizes. But due to risks of epidemics, the animals were not allowed to return to Finland. Instead, they were auctioned with great difficulty in Moscow and with the sellers not receiving good financial remuneration.[40] In other words, a prize and the fame were more important for a breeder than keeping hold of a prize animal.

37 Anon., "Joku määrä härkiä ja hiehoja," *Sanomia Turusta*, August 16, 1879, 2.

38 Antti Manninen's report, translated and forwarded by the Senate's department of agricultural and public works to the Finnish Economic Society, April 12, 1861. The Finnish Economic Society Archive D I: 3.

39 Anon., "En mycket vacker storväxt Ayrshire tjur," *Helsingfors Dagblad*, April 23, 1881, 3; Anon., "Fler st. fullblods Ayrshire ungtjurar," *Helsingfors Dagblad*, April 24, 1881, 4.

40 Rob[ert] Runeberg, *Berättelse om Finlands deltagande i allmänna ryska konst och industriutställningen i Moskva 1882.* (Helsinki: J. Simelii arfvingars tryckeri, 1883).

Changing evaluations of breeds and foreignness

The expected productivity of a breed was crucial when animals were acquired as well as the decision about what was intended to be produced, for example, milk or meat in case of bovines. Both could hardly be attained. Whilst the meat industry was the biggest sector in global terms, Finland counted on dairy production and thus, breeds of dairy cows prevailed. Another decisive factor in choosing breeds was their capability to acclimatise to the new environment.

Agricultural schools and the wealthiest manors could offer the best feed and the best care for the newcomers. It was vital to ensure that animals arriving from abroad, who were accustomed to more-or-less mild climates, would survive the Finnish winter and that the feed available would suit them. Even the survival of sheep, who as a species were considered to be resistant and were able to metabolise poor feed that was unfit for bovines and horses, was not self-evident in Finland. At a national agricultural meeting it was frankly stated that sheep who produced wool of the highest quality were too vulnerable and therefore it would be necessary to be content with sheep whose wool was coarse.[41] Yet, it was not only Finland or other Nordic countries that experienced difficulties with foreign-born animals. Spanish merino sheep, when translocated to Britain, did survive but lost their adored soft wool, which was gradually transformed to a much coarser coat in the new environment.[42]

The acclimatisation of animals was an intriguing issue in the age of revolutionised transport technologies and expanding empires.[43] The phenomenon included the large-scale outward-bound movement of farm animal stocks from Europe[44] and financially less successful experiments of breeding "exotic" species imported from the colonised regions.[45] Animals imported to Finland from other European locations formed part of a busy network of intra-European mobility, which thoroughly transformed European farm animal stocks.[46] British breeds were extremely popular, but not without competitors. The dominant position of Ayrshires was especially challenged by Angelns, originating in Schleswig. The

41 *Wiidennen Yhteisen Suomen Maanwiljelijäin-Kokouksen Haminan kaupungissa w. 1860 toimituksia* (Helsinki: SKS, 1862), 74–77.

42 Woods, *The Herds*, 52–77.

43 Dorothee Brantz, "The Domestication of Empire. Human–Animal Relations at the Intersection of Civilization, Evolution, and Acclimatization in the Nineteenth Century," in *A Cultural History of Animals in the Age of Empire*, ed. by Kathleen Kete (Oxford and New York: Berg, 2011), 86–92.

44 Woods, *The Herds*, 109–64.

45 Ritvo, *The Animal Estate*, 232–242.

46 Felius et al., "On the History of Cattle Genetic Resources."

Finnish Senate hurried to acquire 120 Angeln bovines at one time in the mid-1870s and, as mentioned above, it was an exceptionally big acquisition.[47] It was exceptional also in another way: these bovines were such welcome novelties that auctioning them produced profit for the State. The Senate usually subsidised animal husbandry by selling imported breeding animals at auctions at a price that did not cover all expenses. Finns were eagerly following a trend that hyped Angelns. In fact, some warned that the international demand for the breed was larger than the supply. It was claimed that all kinds of animal individuals were being sold, not only those most suited for breeding, and even cattle from neighbouring regions, which only had their colour in common with Angelns, were sold as pure-bred Angelns.[48]

To avoid unsuccessful purchases, a first-hand selection made by a reliable specialist was still needed in the same manner as Lindeqvist and Gibson had worked two decades earlier. At the same time, competition was getting even tougher and animal markets were overheating. Problems were not restricted to Angelns, but even the quality of the world-famous Ayrshires that were put up for sale was doubted. For a long time, foreignness had been seen as a guarantee of quality,[49] but towards the end of the 1870s and especially in the 1880s more dissonant voices were heard. The new Finnish state agronomist, K. J. Forsberg, who travelled himself to Scotland to continue the already traditional purchasing of Ayrshires, criticised this practice in the early 1880s. At a meeting of agronomists, he, first, argued that such huge numbers of animals had been and continued to be exported from Scotland that those currently on sale or recently imported to Finland should be considered quite common bovines of local farmers, rather than special breeding animals. Second, he recommended that the State should stop purchasing Ayrshires abroad and focus on Finnish-born Ayrshires. Arguably they had the advantage of having already become accustomed to Finnish conditions and at the time when their progenitors had been imported, individuals of higher quality had been more easily available.[50] Forsberg's suggestion was not, however, a total novelty as the State had already promoted the distribution of Finnish-born pedigree animals. For example, in 1877, purebred two-year-old Ayrshire bulls, born in Southern Finland, were bought by the State and were auc-

47 Anon., "Importen af afvelsdjur," *Helsingfors Dagblad*, August 29, 1875, 1.

48 Anon., "Om importen af Angler boskap," *Helsingfors Dagblad*, November 22, 1874, 1.

49 On contemporary Finnish attitudes on foreignness in general, see Taina Syrjämaa, "Making Difference, Seeking Sameness. Negotiating Finnishness and Foreignness in an Exhibition," in *Nordic Perspectives on Encountering Foreignness*, ed. by Anne Folke Henningsen, Leila Koivunen and Taina Syrjämaa (Turku: General History, University of Turku, 2009), 27–40.

50 Anon., "Agronomien kokous," *Sanomia Turusta*, March 17, 1883, 1.

tioned in order to be transposed northwards.[51] From this perspective, a mixture of foreign ancestry and recent Finnish pedigree came to be seen as optimal, even for pure-bred Ayrshires. Thus "Finnish" Ayrshires were valued higher than "Scottish" Ayrshires in Finland. Interestingly enough, Britons themselves were quite perplexed and worried about the risk of cattle losing their nativeness and valuable characteristics when farmed away from the home region.[52]

In practice, the vast majority of Finnish pedigree animals with foreign ancestors were cross bred. The catalogue of the Turku agricultural show of August 1881 clearly demonstrates the importance of crossbreeding. First, crossbred bovines were even included in the classes of purebred Ayrshires and Angelns, which were the only two breeds that had their own specific categories. Animal individuals who had a maximum of a 1/4 of another breed were classified as purebred. Second, of the approximately 450 bovines present, the largest category by far consisted of crossbred individuals. Among these were individuals defined as Angelns that had been crossbred with local manor stock; Angelns that had been crossbred with Ayrshires; bovines that were half Dutch and half English; those of a Finnish–Danish breed, and some of a Dutch–Finnish breed.[53] The geographical denominations uncover mobility over generations, but they also provide evidence of how fickle the field was and how different breeders and manors undertook divergent experiments in search of increased productivity and endurance to the local conditions. Thus, alongside well-established and widely recognised breeds there were also local mixtures with ad hoc designations.

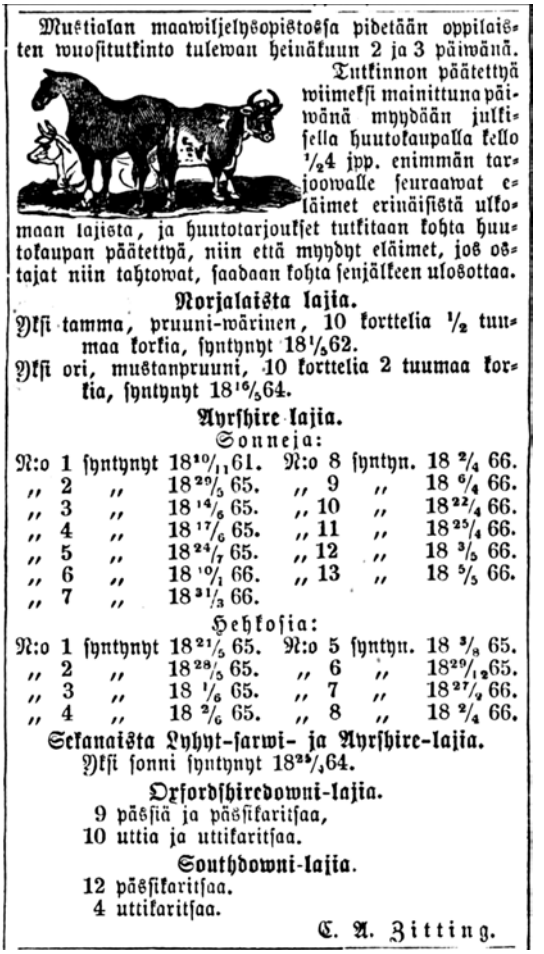
This meant that a limited number of purebred animals were used to raise larger crossbred cattle. In order to further enhance breeding in Finland, imported animal individuals were excluded from prizes in the show. Instead, second or later generations of imported animal individuals were accepted in competition. A very restricted number of these entrants could be purebred, intended primarily for breeding and producing offspring, whilst the task of the majority of crossbred cattle was to produce milk. Grim, a two-and-a-half-year-old Ayrshire bull from Qvidja Manor in the Turku Archipelago, serves as an example of this. Whilst he was a purebred, he was exhibited in the show together with nine cows and four calves who were Ayrshires who had been crossbred with local manor stock.[54]

51 See, for example, Anon., "Virallisia ja laillisia julkistuksia," *Suomalainen Wirallinen Lehti*, July 19, 1877, 3.

52 Woods, *The Herds*, 12–13, 49.

53 *Kahdeksas Yleinen Suomen Maanwiljelyskokous Turussa 1881. Luettelo*, (Turku: G. W. Wilén, 1881), 3–27.

54 *Kahdeksas Yleinen*, 8, 18–19.



Mustialan maanwiljelysopistossa pidetään oppilaiden wuositutkinto tulewan heinäkuun 2 ja 3 päiwänä.

Tutkinnon päätettyä wiimeksi mainittuna päiwänä myydään julkisella huutokaupalla kello ½4 jpp. enimmän tarjoowalle seuraawat eläimet erinäisistä ulkomaan lajista, ja huutotarjoukset tutkitaan kohta huutokaupan päätettyä, niin että myydyt eläimet, jos ostajat niin tahtowat, saadaan kohta senjälkeen ulosottaa.

Norjalaista lajia.

Yksi tamma, pruuni-wärinen, 10 korttelia ½ tuumaa korkia, syntynyt 18 1/5 62.

Yksi ori, mustanpruuni, 10 korttelia 2 tuumaa korkia, syntynyt 18 16/5 64.

Ayrshire-lajia.

Sonneja:

N:o	1	syntynyt	18 10/11 61.	N:o	8	syntyn.	18 2/4 66.
„	2	„	18 29/5 65.	„	9	„	18 6/4 66.
„	3	„	18 14/6 65.	„	10	„	18 22/4 66.
„	4	„	18 17/6 65.	„	11	„	18 25/4 66.
„	5	„	18 24/7 65.	„	12	„	18 3/5 66.
„	6	„	18 10/1 66.	„	13	„	18 5/5 66.
„	7	„	18 31/3 66.				

Lehkosia:

N:o	1	syntynyt	18 21/5 65.	N:o	5	syntyn.	18 3/8 65.
„	2	„	18 28/5 65.	„	6	„	18 29/12 65.
„	3	„	18 1/6 65.	„	7	„	18 27/4 66.
„	4	„	18 2/6 65.	„	8	„	18 2/4 66.

Sekanaista Lyhyt-sarwi- ja Ayrshire-lajia.

Yksi sonni syntynyt 18 28/5 64.

Oxfordshiredowni-lajia.

9 päsiä ja päsikaritsaa,
10 uttia ja uttikaritsaa.

Southdowni-lajia.

12 päsikaritsaa.
4 uttikaritsaa.

C. A. Zitting.

Figure 1.2: Mustiala Agricultural School announced an annual auction of pedigree animals, such as Norwegian horses, Ayrshire bovines as well as Oxford Down and Southdown sheep. Ayrshire cattle, born in the school, were presented in the most detailed manner with exact birthdays. Anon., "Mustialan maanwiljelysopistossa," *Sanomia Turusta*, June 1, 1866, 4.

As important as breeding was, the question of how inheritance actually functioned and what were the optimal practices when seeking to produce better descendants did not find univocal answers. British breeders, who were recognised as being the most esteemed specialists globally, continued to put their faith in practical experience. Thus, the major shifts in scientific paradigms regarding evolution, selection and inheritance did not make a difference in their practices instantly. Instead, older assumptions, such as the supposed priority of males in

determining the characteristics of the offspring partially lingered on. Such conceptions, embedded in contemporary culture, could also transcend boundaries of species and intersectionally connect with issues of gender and social position.[55] Females (both nonhuman and human) could be considered to be passive and only served as a fertile space in which the seeds of the male would grow. On the other hand, female sexuality could be seen as menacing and in need of being restricted and controlled.[56]

The great utility of a single highly ranked breeding animal was emphasised, for example, in the above-mentioned manual on animal husbandry that was published in Finnish in 1861. It described in detail how one bull could produce better offspring, even if the cow was considered to have poor qualities. It was presumed that each new generation would be improved if the bull mated with the progeny of his daughter. It was assumed that after the eighth round, the offspring would have 7/8 of the qualities of the esteemed bull and only 1/8 left of the poor inheritance of the first cow.[57] Such a model made crossbreeding appear as a most profitable alternative and persuaded those who were still distrustful about animal husbandry to invest in breeding.

Towards the end of the century, the views on inheritance and breeding gradually changed and a more theoretical basis for systematic breeding was developed. Simultaneously, following the views of Professor Victor Prosch, from Denmark, interest in nativeness and local stocks grew in Finland. Besides "national" horse and dog breeds, traditional domestic bovines were also sought out.[58] In Norway, in fact, regional Telemark cows had already been gaining in popularity since the middle of the nineteenth century. The very same state agronomist Lindeqvist, who walked around Ayrshire in search of excellent foreign breeding animals in 1860, had escorted Telemark cows to Oslo a few years earlier.[59] Finnish promoters of domestic breeds criticised the omnipresence of foreign breeds and how local stocks had

55 Dominik Ohrem, "Feminist Intersectionality Studies," in *Handbook of Historical Animal Studies*, ed. by Mieke Roscher, André Krebber and Brett Mizelle (Berlin, Boston: De Gruyter Oldenbourg, 2021), 341–355, especially 347.

56 Woods, *The Herds*, 27–37; Harriet Ritvo, *Noble Cows and Hybrid Zebras. Essays on Animals and History* (Charlottesville and London: University of Virginia Press, 2010, 13–28.

57 Anon., *Lyhykäinen Oppikirja Karjan hoidossa*, (Hämeenlinna: G. E. Eurén, 1861), 11.

58 Hilja Toivio, "Risteytyksistä maatiaisrotuihin. Professori Victor Prosch ja kotieläinjalostuksen murros 1800-luvun jälkipuoliskolla," *Lähde. Historiatieteellinen aikakauskirja* 2014, 96–122. On dog breeds, see Taina Syrjämaa, "Spectacles of Modern Companionship: Men, Dogs and Early Finnish Dog Shows," in *Shared Lives of Humans and Animals. Animal Agency in the Global North*, ed. by Tuomas Räsänen and Taina Syrjämaa (London: Routledge, 2017), 63–77.

59 Liv Emma Thorsen, *Dyrenes by. Hover, klover og klør i Kristiania 1859–1925* (Oslo: Press, 2020), 178–180.

been crossbred with them. Eventually, the quest for domestic breeds led to peripheral regions where foreign breeding animals had not had impact on local stocks.[60] From this perspective, the foreignness of breeding animals was not only unwelcome, but outright disastrous.

Epidemics constituted another factor that questioned the value of foreign-born animals. It was feared that during such epidemics the animals would carry diseases – as did happen, but they were also blamed for diseases which actually were endemic. In any case, some breeds appeared to be particularly vulnerable. Ayrshires were prone to suffer from pneumonia. This was a well-known but unsolvable problem, which occurred time after time. The Mustiala Agricultural School reported, for example, in 1883 that it had had to slaughter six Ayrshires and two crossbred Ayrshires. It was underlined that half of slaughtered Ayrshires had been killed because of pneumonia. Furthermore, their value as milkers was questioned in the same context as it was noted that only one of them had been a top milker, whilst the others were mediocre or poor.[61] However, when announcing the sale of "precious" bull calves just a few months earlier, the very same school emphasised that their father had been imported from Great Britain a year before.[62] Such a kinship and fresh connection to the British Isles was still expected to sound promising in the ears of potential purchasers. Although the glory of foreignness and foreign-born pedigree animals was wavering, their inheritance was powerful.

Conclusion

Breeding animals, including the individuals who travelled by the steamer *The Albion* across the North Sea and the Baltic Sea to Finland in August 1862, were expected to survive and leave a permanent imprint on the livestock of their new home. They were also envisaged as assisting in making the country wealthier. The modernisation of animal husbandry involved transnational mobility of both animals and humans: foreign specialists were recruited and promoters and pro-

60 Toivio, "Risteytyksistä maatiaisrotuihin," 111–115; Raimo Savolainen, "Grotenfelt, Nils (1846–1902)," *Kansallisbiografia*, (Helsinki: SKS), accessed August 15, 2022, http://urn.fi/urn:nbn:fi:sks-kbg-007588.

61 Anon., "Årsberättelse om Mustiala landtbruks- och meijeriinstitut för tiden 1 juli 1882 – 1 juli 1883," supplement number 247, *Finlands Allmänna Tidning*, October 23, 1883, [1]. On animal diseases, see, e.g., Abigail Woods, "A Historical Synopsis of Farm Animal Disease and Public Policy in Twentieth Century Britain," *Philos Trans R Soc Lond B Biol Sci* 366 (2011):1943–1954, doi: 10.1098/rstb.2010.0388.

62 Anon., "Årsexamen," *Helsingfors Dagblad*, June 7, 1883, 4.

fessionals of animal husbandry travelled abroad to learn and conquer ground in international markets; farm animals were imported for breeding, whilst some of them or their offspring were sent to agricultural shows to represent Finnish potential for further progress.

To adapt the idea of Oxley Heaney et al., whereby the reception and evaluation of animal immigrants varies according to human expectations,[63] it can be said that the breeding animals were mostly welcome, but not always. They were seen as being potential threats when it was feared that they endangered the health of other cattle or of the human population. Towards the end of the nineteenth century, proponents of national breeds also considered them a menace to domestic breeds. Yet mostly these newcomers were quite highly appreciated, which in terms of immigration may be exceptional. They were an animal elite whose survival was crucial. Prosaically, they were expensive investments from a human point of view. They were, no doubt, exploited and they certainly suffered from journeys, translocations and new challenging living conditions, but compared to other animals on the move or living in Finland, they were offered better feed and more professional care. The status of having been acquired and imported at the expense of the Senate also protected them from being slaughtered and from being sold abroad for a minimum of three years. As breeding animals, bulls in particular had a much longer life expectancy than they otherwise would have had.

These animal immigrants were at the vanguard of modernisation. They became co-actors in the modernisation process of the entire society: with their bodies and lives they advanced a gradual shift from low-yield grain growing to more profitable animal husbandry. This meant a fundamental transition from rural self-sufficiency to commercialised monetary economics, which in turn changed society fundamentally. They also connected Finland to international markets and the production logic of animal industries, which thrived in more rapidly industrialised and more urbanised countries of the future Global North. The Finnish position in the international animal economy can be compared to colonial complicity, that is, how Finland joined a colonial mindset although it did not possess colonies itself.[64] In a similar manner, although Finland did not have Chicago-style slaughterhouses and it did not succeed in conquering international markets of products of animal origin, as Denmark did, it did participate in the very same system in which animal husbandry was intensified in order to enrich humans and nations.

63 Oxley Heaney et al., "Members only?".

64 Raita Merivirta, Leila Koivunen, and Timo Särkkä, "Finns in the Colonial World," in *Finnish Colonial Encounters. From Anti-Imperialism to Cultural Colonialism and Complicity*, ed. by Raita Merivirta, Leila Koivunen and Timo Särkkä (Cham: Palgrave Macmillan, 2022), 1–38, doi.org/10.1007/978–3-030-80610-1_1.

Taija Kaarlenkaski

2 Exploring the roots of high milk consumption in Finland

Introduction

Cow milk and dairy products are largely seen as an integral part of a healthy diet in Western countries. For example, when the Swedish oat milk company *Oatly* launched an advertising campaign in Finland in October 2020, which questioned the necessity of consuming cow milk, it ignited a heated debate among dairy industry representatives and milk producers and also among consumers. Milk is integrally associated with several crucial aspects of society: nutrition, agriculture and the food industry, human-animal relationships, politics and economics.[1] Moreover, a rich cultural imagery is associated with milk, from smiling cows to whiteness and purity.[2] This chapter focuses on the history of milk promotion in Finland, where the level of milk consumption has been the highest in the world for decades. Accordingly, dairy industry is still considered to be a cornerstone of Finnish agriculture, although milk consumption rates have been consistently declining since reaching a peak in the late 1950s, and the number of dairy farms has decreased rapidly.[3]

Statistics show that the majority of the world's largest milk consumers are European countries. At the same time, the dairy sector is the second-largest agricultural sector in the European Union and lactose intolerance is rather rare in several

1 Mathilde Cohen and Yoriko Otomo, "Introduction," in *Making Milk: The Past, Present and Future of Our Primary Food*, ed. by Mathilde Cohen and Yoriko Otomo (London: Bloomsbury, 2017), 1–4.

2 Håkan Jönsson, *Mjölk – en kulturanalys av mejeridiskens nya ekonomi* (Stockholm/Stehag: Brutus Östlings Bokförlag Symposion, 2005); Hannah Velten, *Milk: A Global History* (London: Reaktion Books, 2010); Deborah Valenze, *Milk: A Local and Global History* (New Haven: Yale University Press, 2011).

3 "Wikipedia: List of countries by milk consumption per capita," last modified March 20, 2022, https://en.wikipedia.org/wiki/List_of_countries_by_milk_consumption_per_capita; "Luke: Balance Sheet for Food Commodities 2020, preliminary and 2019 final figures," last modified June 24, 2021, https://www.luke.fi/en/statistics/balance-sheet-for-food-commodities/balance-sheet-for-food-commodities-2020-preliminary-and-2019-final-figures; Jyrki Niemi, "Livestock Production," in *Agriculture and Food Sector in Finland 2019*, ed. by Jyrki Niemi and Hanna Väre (Helsinki: Natural Resources Institute Finland, 2019), 36.

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https://doi.org/10.1515/9783110787337-004

European countries, especially in Northern and Central Europe.[4] Moreover, in Atlantic Europe, cattle husbandry has been favourable due to the environmental conditions and the cool climate has helped in preventing the adulteration of milk.[5] Although the earliest indications of human consumption of milk from another animal may be dated back to approximately 5000 BCE in the Near East, or even earlier times, the habit of drinking milk in adulthood is limited to areas where people produce lactase even after childhood and are therefore able to digest lactose without stomach problems. Several reasons have been proposed for this characteristic: either populations who consumed milk for survival became genetically lactose-tolerant through evolution, or continued milk drinking from childhood into adulthood leads to lactose tolerance. It has been estimated that 75 to 80 percent of the world's population are lactose intolerant, and this is especially common in Asia, Africa, Southern Europe and among indigenous people in the Americas and the Pacific. This physical trait strongly affects the level of milk consumption in different areas and also the cultural understandings of milk.[6]

In this chapter, I am interested in the background to the Finnish fascination with milk and dairy products. I will explore the discourses concerning milk as nutrition and the promotion of milk consumption from the late nineteenth century to the 1930s. My main questions are the following: when and how was milk established as an essential element of the diet in Finland? What kind of knowledge and arguments were used to justify the need for increased milk consumption? I will use contemporary newspapers, journals, educational books, leaflets, and promotional films and placards as research material in this chapter. Most of the newspapers and journals can be found in the digital collections of the National Library of Finland,[7] whereas the educational books and leaflets are stored in different libraries and archives.[8] The promotional films may be watched via Elonet or at the National Audiovisual Institute.[9] The analysis of these materials is inspired by cultural studies and aims to explore the different discourses prevalent in the history of milk consumption in Finland. Following the framework of new materialist thought, it is assumed in this chapter that objects, beings, words

4 "World Population Review: Milk Consumption by Country 2022," last modified April 20, 2022, https://worldpopulationreview.com/country-rankings/milk-consumption-by-country.

5 Nicolau-Nos, Roser, Josep Pujol-Andreu, and Ismael Hernández, "Milk, Social Acceptance of a New Food in Europe: Catalonia, 19th–20th Centuries," *Dynamis* 30 (2010): 127.

6 Velten, *Milk*, 15–16, 21–23.

7 "National Library of Finland: Digital collections," last modified April 20, 2022, https://digi.kansalliskirjasto.fi/etusivu?set_language=en.

8 I would like to thank Eeva Nikkilä and Sara Vatanen for their excellent work in mapping out different digital and manual materials related to the early promotion of milk in Finland.

9 "Elonet," last modified June 3, 2022, https://elonet.finna.fi/.

and images constitute the world and the meanings inherent in it.[10] As milk promotion has had similar features in other Nordic countries and Northern Europe in the early twentieth century, it can be assumed that the findings of this study have larger significance regarding the history of milk consumption.[11]

In the following section, I will discuss the situation of agriculture and the significance of butter production in Finland around the turn of the twentieth century. Thereafter I will focus on the modernisation of the dairy industry in Finland in the early twentieth century. The last empirical section explores the intense promotion of milk in Finland in the 1920s and 1930s. The concluding section will summarise the most significant findings of the study.

From grain farming to commercial butter production at the turn of the twentieth century

In traditional Finnish agrarian culture, milk products had a minor role in the diet, because the number of cows on farms was small and they usually did not lactate in winter due to poor feeding. Adults did not drink fresh milk, but it was given to children when available. However, buttermilk and sour milk were popular drinks among adults as they were non-perishable and hence did not require cold storage. Milk was also used for making butter and cheese. Butter, however, was rarely consumed on farms as it was mainly used to pay taxes. Butter, as well as curdled milk, was only served at special festivities.[12] In Finland, the diet in nineteenth-century agrarian culture was based on grain, especially barley and rye. Everyday meals consisted of salted fish or sometimes salted meat, usually

10 See Diana Coole and Samantha Frost, "Introducing New Materialisms," in *New Materialisms: Ontology, Agency, Politics*, ed. by Diana Coole and Samantha Frost. (Durham: Duke University Press, 2010); Peter Atkins, *Liquid Materialities: A History of Milk, Science and the Law* (London: Routledge, 2016), 28–37; Inger Johanne Lyngø, "The National Nutrition Exhibition: A New Nutritional Narrative in Norway in the 1930s," in *Food, Drink and Identity: Cooking, Eating and Drinking in Europe Since the Middle Ages*, ed. by Peter Scholliers (Oxford: Berg, 2001), 146.

11 Carin Martiin, "Swedish Milk, a Swedish Duty: Dairy Marketing in the 1920s and 1930s," *Rural History* 21 (2010): 214–215; Jönsson, *Mjölk*, 31–37; Inger Johanne Lyngø, "The National Nutrition Exhibition." Also see Karin Dirke's chapter in the present volume.

12 Gösta Grotenfelt, *Tietoja Suomen maitotalouden kehityksestä* (Kuopio: K. Malmströmin kirjapaino, 1906), 3, 7; Ilmar Talve, *Suomen kansanomaisesta ruokataloudesta* (Turku: Turun yliopiston kansatieteen laitos, 1973), 86; Merja Sillanpää, *Makeasta happamaan. Suomalaisen ruoka- ja tapakulttuurin kehitys* (Vantaa: Hyvää Suomesta, 1999), 27; Ritva Kylli, *Suomen ruokahistoria. Suolalihasta sushiin* (Helsinki: Gaudeamus, 2021), 52.

served with bread and vegetables, particularly potatoes.[13] The situation was also similar in other countries, which later promoted the drinking of fresh milk, such as other Northern European countries and the United States: until the mid-nineteenth century, dairy products mainly consisted of cheese, sour milk and yogurt. Butter too was highly appreciated.[14]

In Finland, the emergence of dairy husbandry was strongly linked to the modernisation of agriculture, which started around the second half of the nineteenth century. At this time, farming was modernised by shifting production away from grain production and towards milk. Grain production had become unprofitable due to years of crop failure throughout the 1860s and the decreasing world market price of grain. There was also an increasing demand for butter on the international market. For these reasons, the Finnish government[15] started to support cattle husbandry by establishing advisor organisations to counsel farmers on how to produce butter and cheese. Hence, dairy and milkmaid sections within the curriculum were introduced in agricultural schools, and loans were granted to establish dairies.[16] The shift in production methods was linked to wider societal and cultural transformations: the second half of the nineteenth century was characterised by modernisation, industrialisation, and national awakening in Finland.

Hence, dairy production slowly became an important source of income for Finnish farmers. Cattle had previously been primarily kept for producing a supply of manure for grain fields, and milk was mainly used in household consumption. As the status of dairy farming was not yet established during the late nineteenth century, educational newspaper articles and guidebooks set out to increase the appreciation of animal husbandry and emphasise its significance as a livelihood. The central aim of education was to rationalise animal husbandry and replace traditional vernacular practices with more reasonable and profitable procedures.[17]

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13 Sillanpää, *Makeasta happamaan,* 26; Kylli, *Suomen ruokahistoria,* 108–110.

14 E. Melanie DuPuis, *Nature's Perfect Food: How Milk Became America's Drink* (New York: New York University Press, 2002), 5.

15 In 1809, Finland was ceded from Sweden and became an autonomous grand duchy within the Russian Empire, after previously being part of the Swedish Empire. Finland became independent in 1917.

16 Viljo Rasila, "Overview of the History of Finnish Agriculture – from Prehistory to the 21st Century," in *Suomen maatalouden historia III. Suurten muutosten aika. Jälleenrakennuskaudesta EU-Suomeen*, ed. by Pirjo Markkola (Helsinki: Finnish Literature Society, 2004), 497–499; Seppo Simonen, *Lypsykarjatalousvaltainen tuotantojärjestelmä Suomessa. Maataloutta ja maatalouspolitiikkaa vuosisadan vaihteen molemmin puolin* (Helsinki: WSOY, 1949), 89–90.

17 Taija Kaarlenkaski, "Living Machines with Gentle Looks: Materiality and Animal Body in Modernizing Finnish Animal Husbandry," *Humanimalia* 11 (2019). doi: https://doi.org/10.52537/humanimalia.9477.

The first dairies were established in Finland in the 1850s in mansions, but these were rather small-scale facilities that produced butter and cheese. The invention of the separator in 1878 provided an important material and technological impetus for the modernisation and expansion of dairy farming, as it enabled the separation of cream from milk efficiently. The separator was introduced into Finnish dairies in the 1880s. In the 1890s, smaller home separators started to become common, improving the quality of homemade butter.[18] In 1901, new legislation enabled the establishment of cooperative dairies and ushered in a period of rapid growth of this new sector of the industry. The aim was to establish larger and more efficient dairies with up-to-date technologies and capabilities to improve the quality of butter as well as cattle husbandry in the area. At the turn of the twentieth century, dairies also started to pasteurise milk and cream in order to make them healthier and less perishable. In general, milk production started to be seen as serious work based on science, instead of being merely part of household chores.[19] The editor of *Maitotalouden lehti* ('The Journal of Dairy husbandry'), for example, pointed out in 1905 that dairy farming had become an object of thorough scientific research and that it should not be a bystander in the scramble for progress and development.[20] Internationally, milk as a physical and chemical substance had been an object of scientific research since the late eighteenth century. From this time different methods were employed to determine the constituents of milk and this led to more and more accurate knowledge about the properties of this hitherto mysterious liquid.[21]

As highlighted above, butter was the most important dairy product in terms of finance in late nineteenth-century and early twentieth-century Finland. Until the beginning of the 1860s, country-style butter was exported. Dairy-produced butter only became more common after this time.[22] In the late 1870s, approximately 12 percent of total export revenues in Finland came from butter, which underlines its significance for the country.[23] The most important countries im-

18 Väinö Pessi, *Suomen meijeriteollisuuden vaiheita* (Helsinki, Kirjayhtymä, 1966), 14–26; Matti Peltonen, "Uudet kaupallistumisen muodot," in *Suomen maatalouden historia II. Kasvun ja kriisien aika 1870-luvulta 1950-luvulle*, ed. by Matti Peltonen (Helsinki: Finnish Literature Society, 2004), 99–106.

19 Pessi, *Suomen meijeriteollisuuden vaiheita,* 49–52, 58–64; Kaarlenkaski, "Living Machines," 36, 51–53.

20 Toim., "Maitotalouden lehti," *Maitotalouden lehti,* December 29, 1905, 1.

21 Atkins, *Liquid Materialities,* 61–90.

22 Grotenfelt, *Tietoja,* 41.

23 Taina Syrjämaa, "Eläimet, eläinperäiset tuotteet ja edistysusko," in *Tunteva tuote. Kuinka eläimistä tuli osa teollista tuotantoa?,* ed. by Taija Kaarlenkaski and Otto Latva (Tampere: Vastapaino, 2022), 37.

porting Finnish butter were Russia, Denmark and Britain.[24] In 1905, a group of cooperative dairies founded Valio, a cooperative association for exporting butter. By 1911, Valio exported nearly half of the total amount of Finnish butter sold abroad.[25] Due to the financial importance of butter, farmers were educated in order to improve the effectiveness and quality of butter production. Newspaper articles and guidebooks highlighted the significance of how to correctly feed cows, as it was explained that this affected the quality and amount of butter. In addition, the need to improve the hygiene of all the dairy production stages was a recurring theme in educational texts. For example, an educational book describing milk handling in the Elanto cooperative association in Helsinki included pictures of different microscopic bacteria that had been found in milk by 1912. The cleanliness of cows, cowsheds, milkers, and milk containers was emphasised.[26] Thus, human control over different material beings and objects was increased in order to make milk products safer to consume and more appealing to consumers.

The financial importance of butter also affected attitudes towards margarine production in Finland, which was totally prohibited between 1892 and 1909. Thereafter its production was strictly regulated until the 1950s.[27] It was feared that margarine and butter would be mixed and that this would ruin the reputation of Finnish butter in the international market. The aim was to maintain Finland as a "clean country" with regards to the production of margarine. However, there were also other arguments. Fat, for example, was seen as a necessary nutrient in the northern climate. Thus, margarine could provide a cheap source of fat for the population in a poor country. It was suggested that if people in Finland would consume cheap margarine, the quantity of butter, a more expensive product, that could be exported would increase and therefore lead to an increase in profits.[28] After 17 years of prohibition, the latter argument prevailed and the first margarine plant was established in Finland in 1911. However, the debate about the merits of butter and margarine production and consumption continued for decades.[29]

24 Grotenfelt, *Tietoja,* 124.

25 Kari Hokkanen, *Maidon tie. Valio ja osuusmeijerijärjestö 1905–1980* (Helsinki: Kirjayhtymä, 1980), 43–49.

26 Kaarlo Helén, *Maidon käyttö ravintoaineena ja Elannon maitoliike* (Helsinki, Kirjapainoosakeyhtiö Sana, 1912), 6–12; see also, Anon., *Osuusmeijerin jäsen!* (Forssa: Forssan kirjapaino, 1921).

27 Timo Kuukasjärvi, "Maidontuottajat ja margariini – onko sula sopu mahdoton" in *Myrkyn kylvöä vai puhdasta luontoa. Maaseutu, ympäristö ja historia,* ed. by Kimmo Jalonen (Turku: Suomen historia, Turun yliopisto, 1999), 65–67.

28 Grotenfelt, *Tietoja,* 146–149.

29 Mika Pantzar, "Public Dialogue between Butter and Margarine in Finland 1923–1992," *Journal of Consumer Studies and Home Economics* 19 (1995): 11–24.

Milk and modernisation

In the early twentieth century, scientific research on nutrition also began to develop in Finland, following trends already underway in Germany, Britain and the United States.[30] For example, by the mid-nineteenth century, some of the earliest nutritional researchers had begun to examine the value of milk in the United States. They were astonished by the wide range of nutritional ingredients in milk, and some began to refer to it as a "perfect food," because it contained, as they understood, in perfect measure, all the ingredients necessary for life.[31] After the First World War, many governments in Europe and North America started to promote these nutritional findings and emphasised the need for daily milk consumption for both children and adults as a means to create a thriving population.[32]

In Finland, many influential scientists in this field also regarded milk as the basis of healthy nutrition. A. I. Virtanen was one such scientist, who later won the Nobel Prize for Chemistry for developing a method – AIV silage – for preserving hay for cattle in the winter. This innovation enhanced milk production in winter by providing nutrient-rich fodder for the cows, thereby enabling the same vitamin content in milk as during summertime. According to Virtanen, this "winter milk" was especially valuable in Finland because milk was an important source of vitamins A and D.[33] Virtanen worked in the Valio laboratories, which had expanded from a butter exporting cooperation to a leading dairy company in Finland, producing cheese and whole milk for the domestic market. In addition to AIV silage, Virtanen developed AIV salt, which significantly enhanced the preservability of butter.[34]

Virtanen was an enthusiastic spokesperson of milk as a valuable source of nutrition for humans. In the late 1930s, he was a key member in a committee established by the Finnish government that investigated the nutritional state of Finns. According to the study, the nutrition of poor Finns, in particular, was insufficient. They were seen to be especially lacking in vitamin A, and even their calorie consumption was not high enough. As half of the vitamin A consumed by Finns came from milk and butter, Virtanen suggested feeding cows with AIV silage, which also preserved the vitamins in winter and would thereby pass on into their milk. Moreover, he recommended increasing the consumption of butter and whole milk. In

30 Touko Perko, *Mies, liekki ja unelma. Nobelisti A.I. Virtasen elämäntyö* (Helsinki: Otava, 2014), 180–181; Kaija Rautavirta, *Petusta pitsaan. Ruokahuollon järjestelyt kriisiaikojen Suomessa* (Helsinki: Yliopistopaino, 2010), 10–12.

31 DuPuis, *Nature's Perfect Food,* 19.

32 Valenze, *Milk,* 7.

33 Perko, *Mies, liekki ja unelma*, 84–90, 180–181.

34 Hokkanen, *Maidon tie*, 56–58, 64–70.

general, he estimated that the nutrition of Finnish people was satisfactory and even better than in several European countries. Virtanen regarded milk and milk products, as well as grain and potatoes, as being healthier than sugar, wine, meat and margarine.[35] In a leaflet published in 1938, he declared that "of all the foodstuffs we use, milk is nearest to perfection," and that one litre of milk per day, along with butter, bread and potatoes, satisfies all the nutritional needs of the human body. According to Virtanen, it was impossible to nourish people adequately without milk. This was especially the case in Nordic countries.[36]

In addition to Valio's influential laboratory, under the leadership of Virtanen, the company also impacted Finnish dairy husbandry by establishing two professional journals: *Karjantuote* ('Cattle Products') in 1918, which was aimed at people working in the dairy industry, and *Karjatalous* ('Cattle Farming') in 1924, which was directed at dairy farmers. The purpose of the latter journal was to improve cattle tending, feeding and breeding, which were still regarded as inadequate in Finland. Moreover, Valio published dozens of textbooks on cheese making and other dairy questions and organised educational opportunities for both dairy professionals and farmers.[37] Advertising was an important aspect in increasing milk consumption. Margarine companies were among the most frequent advertisers in the 1920s. Consequently, dairy companies, with Valio at the fore, also increased their advertising.[38]

Thus, fresh milk as a drink for all population groups was strongly intertwined with the development of science and technology and the modernisation of society as a whole. Making milk non-perishable and safe to drink required innovations like pasteurisation and equipment to transport it efficiently and to preserve it chilled. Moreover, the urbanisation of societies created markets for milk in towns and cities. Milk was associated with development, progress and modernity.[39] As DuPuis has importantly pointed out, the large-scale consumption of fresh milk was only possible though the development of an industrial food system and is a thoroughly modern practice.[40]

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35 Perko, *Mies, liekki ja unelma,* 181–187; Artturi I. Virtanen, *Maidon, maitotuotteiden ja munien merkitys ravinnossamme* (Helsinki: Ilmoittajain reklaamitoimisto, 1938), 4.

36 Virtanen, *Maidon, maitotuotteiden ja munien merkitys*, 1.

37 Seppo Simonen, *Valio. Meijerien keskusosuusliike* (Helsinki: Yhteiskirjapaino Osakeyhtiö, 1955), 200–208; Hokkanen, *Maidon tie*, 68–74.

38 Touko Perko, *Valio ja suuri murros* (Helsinki: Otava, 2005), 400–401.

39 Jönsson, *Mjölk*, 38–41; Paulina Rytkönen, "From Local Champions to Global Players: The Structural Transformation of the Dairy Sector in a Globalization Perspective," in *From Local Champions to Global Players: Essays on the History of the Dairy Sector*, ed. by Paulina Rytkönen et al. (Stockholm: Stockholm University, 2013), 23–26; Martiin, "Swedish Milk, a Swedish Duty," 219–220, 229.

40 DuPuis, *Nature's Perfect Food*, 30.

"Continuous and totally unbiased milk and cheese propaganda"

In the 1910s and 1920s, an increasing number of articles in Finnish newspapers and journals emphasised the significance of milk as part of a healthy diet. Many pieces described the demand for increased milk consumption abroad, supported by particular Milk Propaganda Offices that had been established to help disseminate educational material on the benefits of the product to consumers.[41] However, it is important to remember that in the early twentieth century the word "propaganda" in Finnish had neutral connotations and referred to advertising and spreading information on different issues.[42]

In 1926, Kulutusmaidontuottajain liitto ('The Federation of Whole Milk Producers') was established. The federation was founded to supervise the interests of milk producers, as the prices paid for the product had been very low and had been fluctuating, especially in Greater Helsinki. The federation also aimed at improving the quality of milk and advancing the conditions of milk trade and transport. In addition, the federation paid attention to the fact that the amount of milk sent to Helsinki and other population centres in Southern Finland occasionally exceeded consumption, and this surplus had to be processed and sold at a lower price.[43] The growth in milk production was also noted in contemporary newspaper articles, and increasing consumption was seen as a solution to the situation.[44] Thus, one of the most important goals of Kulutusmaidontuottajain liitto was to increase milk consumption by informing consumers about the healthiness of milk and its cheapness compared to other everyday foodstuffs. The federation also started to publish a professional journal entitled *Maito/Mjölk* ('Milk'), in order to inform its members

41 See, for example, August Östergren, "Maidon merkitys kansan ravintoaineena," *Karjantuote,* May 31, 1918, 90–91; Anon., "Maitotalouspropaganda Ruotsissa," *Karjantuote,* April 30, 1925, 201–204; Anon., "Kiviniemen kotieläinnäyttely," *Käkisalmen Sanomat,* September 9, 1926, 2; Anon., "Voimakasta propagandaa maitotaloustuotteiden käytön lisäämiseksi Yhdysvalloissa," *Maaseudun Tulevaisuus*, September 6, 1927, 1–2; Anon., "Juuston y.m. maitotaloustuotteiden tuotanto paljon kohonnut kaikissa maissa," *Uusi Suomi,* July 13, 1927, 5. On milk promotion associations in different countries in the Global North, see Martiin, "Swedish Milk, a Swedish Duty," 214–215.

42 Louis Clerc, "Propagandaa vai tiedotusta?," *Historiallinen aikakauskirja* 114 (2016): 4.

43 E. Saura, *Kulutusmaidon tuottajain liitto 1926–1936* (Helsinki: Maalaiskuntien liiton kirjapaino, 1937), 6–7, 12.

44 Anon., "Juuston y.m. maitotaloustuotteiden tuotanto," 5; Anon., "Uusi propaganda-aihe," *Länsi-Suomi*, March 27, 1927, 2. A similar situation was also discussed in other countries, such as Sweden, Norway and the United States; see Martiin, "Swedish Milk, a Swedish Duty," 215, 228; Lyngø, "The National Nutrition Exhibition," 151; DuPuis, *Nature's Perfect Food*, 114.

about its activities.[45] An article on the need for "continuous and totally unbiased milk and cheese propaganda" in Finland appeared in the very first issue of the journal.[46] To increase milk consumption and raise awareness about the healthiness of milk, the federation published several editions of *Kodin maitokirja/Hemmets mjölkbok* ('The Milk Book for Homes') in 1928 and 1929, which was aimed at housewives. Moreover, the first Finnish poster advertising milk products was printed in 1928, stating "milk is the source of our health."[47]

Figures 2.1, 2.2 and 2.3: Finnish milk promotional posters. The poster on the left, from 1928, states "milk is the source of our health." The poster in the middle declares "Only genuine cream is served here" and the one on the right "More milk.". Photos by Katariina Pehkonen. Helsinki University Museum Flame.

In 1930, Kulutusmaidontuottajain liitto and Helsingin Maidontarkastusyhdistys ('The Association of Milk Examination in Helsinki') founded Suomen Maitopropagandatoimisto ('The Finnish Milk Propaganda Office').[48] A similar association had been established in Sweden in 1923, and there were similar organisations in other Northern and Central European countries, as well as in North America at the time. According to Håkan Jönsson, the promotion of dairy products was politically uncontroversial in Scandinavia, because the agrarian movement benefited from increased milk consumption. Moreover, the Social Democrats endorsed free school milk as a significant

45 Anon., "Lukijalle," *Maito*, January 1, 1927, 3. As the official languages of Finland are Finnish and Swedish, the journal as well as many other publications of the federation was published in both languages.
46 Anon., "Maito- ja juustopropagandatyö," *Maito,* January 1, 1927, 8.
47 Saura, *Kulutusmaidon tuottajain liitto*, 24–25.
48 Saura, *Kulutusmaidon tuottajain liitto*, 25.

element in their advancement of social policy. This mutual understanding made collaboration in coalition governments easier in the 1930s.[49] The newspaper of the Social Democrats in Finland also promoted milk consumption in cities and towns.[50] Thus, the widely accepted wholesomeness of milk could be seen as a lubricant in the negotiations of political parties that often had opposing interests.

The central aim of the Milk Propaganda Office was to promote milk and dairy products instead of margarine and different milk-product substitutes, such as artificial cream that had captured markets through effective advertising campaigns in the 1910s and 1920s. Moreover, the increased consumption of coffee, beer and other malted drinks, as well as different soft drinks caused concern and milk was presented as a healthier option to these drinks.[51] To achieve these aims the office published and disseminated posters, postcards, leaflets and books. For example, 250,000 copies of *Kodin maitokirja* were distributed.[52] This 32-page booklet included articles about the health benefits of milk, advice on milk handling, information on milk use in different countries and cooking recipes for milk-based dishes. For example, milk was presented as one of the cheapest foodstuffs in relation to calorie content.[53] In addition, the office produced lectures that were broadcast by the Finnish Broadcasting Company and sent articles written by doctors and nutrition experts to newspapers. The office was funded by the Federation of Whole Milk Producers, The Association of Milk Examination in Helsinki, as well as the Finnish state, whose stake was approximately seven percent in terms of overall funding.[54]

Moreover, The Milk Propaganda Office participated in agricultural and nutrition exhibitions, showing posters and statistical tables, distributing leaflets and postcards and organising lectures.[55] It also organised "milk weeks" and "milk days"

49 Jönsson, *Mjölk*, 32–35. See also DuPuis, *Nature's Perfect Food*, 113–121; Lyngø, "The National Nutrition Exhibition," 145, 158; Martiin, "Swedish Milk, a Swedish Duty," 214–215; Henrik Meinander, *A History of Finland,* trans. Tom Geddes (New York: Oxford University Press, 2020), 182–183.

50 Anon., "Maidon käyttöä ravintotaloudessa olisi lisättävä," *Suomen Sosialidemokraatti*, December 24, 1927, 1, 5.

51 See, for example, E. Saura, "Mainonta ja maitomyymälöitten ikkunat," *Maito*, January 1, 1931, 12–14; Kokko, "Maitotuotteiden mainostus," *Maaseudun Tulevaisuus*, August 2, 1932, 3–4.

52 Saura, *Kulutusmaidon tuottajain liitto,* 25–28. The activities of the Swedish sister organisation were rather similar. See Jönsson, *Mjölk,* 32–37; Martiin, "Swedish Milk, a Swedish Duty," 224–227.

53 Tigerstedt et al., *Kodin maitokirja* (Kulutusmaidontuottajain liitto, 1928); Tigerstedt et al., *Kodin maitokirja. Pohjois-Savon ja Pohjois-Karjalan numero* (Kulutusmaidontuottajain liitto, 1929). For similar arguments on the cheapness of milk, see Helén, *Maidon käyttö ravintoaineena*, 5; Osmo Turpeinen, *Maito on paras ruoka-aineemme!* (Helsinki: Kenraali Mannerheimin lastensuojeluliitto, 1938), 7.

54 Saura, *Kulutusmaidon tuottajain liitto*, 25–28.

55 Anon., "Maitopropagandatoimisto työskentelee pula-ajasta huolimatta määrätietoisesti," *Ajan suunta*, January 19, 1933, 3; Anon., "Kulutusmaidontuottajain liitto ja Suomen maitopropagandatoimisto elintarvikemessuilla," *Maaseudun Tulevaisuus*, November 1, 1932, 5.

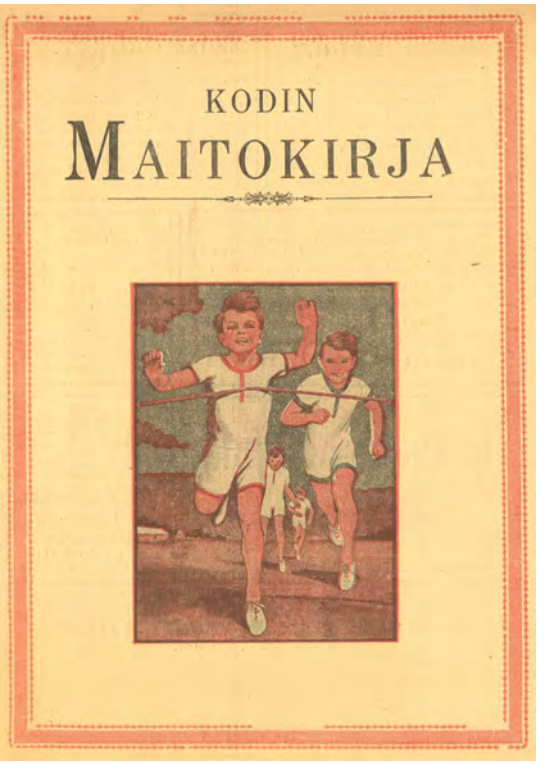

Figure 2.4: The cover of *Kodin maitokirja*. Another version of the book cover included a heading stating: "A healthy soul in a healthy body. To stay healthy, consume enough milk in your diet!".

around the country. For example, in Helsinki, milk days in 1936 and 1937 were arranged in cooperation with several other organisations, and they included lectures and exhibitions, and discussions and talks were broadcast on the radio. Leaflets promoting milk were distributed in schools, and trucks carrying giant milk glasses drove around the city. Milk-based dishes were on display, accompanied with posters showing their nutritional value and price.[56] In both 1936 and 1937, Professor A. I. Virtanen delivered a lecture entitled "Milk as Quality Nutrition and a Source of Vitamins." Milk days were especially directed at housewives in order to give them

56 Anon., "Valistustoiminta maitotaloustuotteiden kulutuksen tehostamiseksi," *Maito*, January 1, 1937, 18; Anon., "Maitopäivät Helsingissä t.k. 29–30 p:nä," *Helsingin Sanomat*, March 22, 1936, 17; Anon., "Maitopäivien avajaiset pidettiin Säätytalossa," *Helsingin Sanomat*, March 30, 1936, 6.

information on the significance of milk as nutrition.[57] Between 1936 and 1939, a large number of smaller scale milk days were organised throughout the country. These events were mainly organised by the Martha Organisation, a Finnish home economics organisation, founded in 1899. The organisation aimed to modernise and rationalise housework by applying the principles of domestic science. The focus was on efficiency and the modification of eating habits to ensure a healthier diet and to maximise the economic rationality of housekeeping. Following the model of Helsinki milk days, the local smaller events also included lectures delivered by dairy professionals and teachers of home economics, as well as practical demonstrations on milk handling and how to cook milk-based dishes.[58] It may be assumed that through these grass roots level milk days, the message of milk promotion was spread efficiently to the Finnish people.

In several newspaper and journal articles and leaflets, high milk consumption was connected with civilisation, and countries promoting milk were presented as civilised countries.[59] Naturally, Finland wanted to be among these countries. In some newspaper articles, the high milk consumption rates in Finland were commented upon with a sense of national pride.[60] Regarding nationalism, it is remarkable that most of the children depicted in the milk propaganda posters were blonde. Similar imagery was also typical in educational leaflets. Furthermore, the white colour of milk is often emphasised and reflected in the pictures. For example, the cover of *Kodin maitokirja* featured athletic children in white clothes. As Jönsson has pointed out, the whiteness of milk is often symbolically extended to its drinkers, referring to purity, modernity and progress (see Figures 2.2, 2.3 and 2.4 above).[61] It also seems that milk was seen as an important factor at the state level in raising the nutritional state of the Finnish people. According to a newspaper report, the Minis-

57 Anon., "Maitopäivät Helsingissä ensi sunnuntaina ja maanantaina," *Helsingin Sanomat*, March 28, 1936, 9; Anon., "Valistustoiminta," 18.

58 See, for example, Anon., "Oulun Marttayhdistyksen kokous," *Kaiku*, September 11, 1936, 2; Anon., "Maitojuhlia," *Eteenpäin*, October 21, 1937, 3; Anon., "Maitopäivät Mäntylahdessa," *Savo*, November 1, 1938, 4; Anon., "Marttatoimintaa Ruukissa," *Liitto*, November 12, 1938: 4; Anne Ollila, *Suomen kotien päivä valkenee . . . Marttajärjestö suomalaisessa yhteiskunnassa vuoteen 1939* (Helsinki: Suomen Historiallinen Seura, 1993), 104–127, 340–341.

59 Anon., "Propagandatyö maitotaloustuotteiden menekin turvaamiseksi kaipaa voimakkaampaa tukea karjanomistajapiirien taholta," *Maaseudun Tulevaisuus*, July 16, 1932, 1; Tigerstedt et al., *Kodin maitokirja. Pohjois-Savon ja Pohjois-Karjalan numero*, 17.

60 See, for example, E. Saura, "Hyvä maito – ihmisen paras ravinto," *Maaseudun Tulevaisuus*, December 14, 1935, 6, Anon., "Kiviniemen kotieläinnäyttely," 2. On the national significance of milk consumption in Sweden, see Martiin, "Swedish Milk, a Swedish Duty," 227–228. Also see Dirke in the present volume.

61 Jönsson, *Mjölk*, 39–40.

ter of Social Affairs gave a talk on milk days in Helsinki in 1936 in which he referred to the connection between inadequate nutrition and low fertility and several diseases. According to him, milk consumption should be increased "in the name of the health and wellbeing of our people."[62]

Milk consumption in Finland, however, was already high compared to many other countries in the early twentieth century.[63] In 1912, it was estimated that approximately 300 kilos of milk was consumed per person in a year in Helsinki. This was significantly more than in many European cities, such as Berlin (117 litres per year), Munich (135 litres) or Zurich (153 litres). Only in Stockholm did people consume nearly as much as in Helsinki (270 litres).[64] Finnish food historians have also pointed out that milk was commonly consumed with meals in the 1920s and 1930s, especially in the countryside. Indeed, foreign visitors in the 1930s wondered at Finnish adults drinking milk.[65] In 1932, the secretary of the Pellervo Society,[66] Ilmari Rahola, stated that increased milk consumption was no longer necessary from a physiological perspective. Similarly, the managing director of Valio, Antti Parviala, pointed out four years later that possibilities to raise milk consumption were scarce as it was already at a higher level than in neighbouring countries. He estimated that people in Finland consumed 0.68 litres of milk per day, whereas in Oslo and Copenhagen the amount was 0.4 litres and in Stockholm it was 0.4 to 0.5 litres.[67] However, it was often mentioned that one litre of whole milk per person per day was the optimum. Hence there was still room for an increase in consumption among the Finnish population.[68] According to Rahola and Parviala, the reason for high milk consumption was the low consumer price of milk: in Finland milk was sold at half the price as in Sweden. However, both were of the opinion that it was still possible to increase the consumption of butter and cheese and thus find new markets for milk products.[69]

62 Anon., "Maitopäivien avajaiset," 5.

63 The lack of worldwide statistics from the early twentieth century makes it difficult to present precise levels of consumption. Thus, estimates found from different sources are used.

64 Helén, *Maidon käyttö ravintoaineena*, 13.

65 Sillanpää, *Makeasta happamaan*, 63; Kylli, *Suomen ruokahistoria,* 235.

66 An organisation promoting the cooperative system in Finland.

67 Ilmari Rahola, "Kotimaisten maataloustuotteiden mainostus," *Suomen osuustoimintalehti*, May 1, 1932, 222; Anon., "Maitopropaganda tuottanut hyviä tuloksia," *Turun Sanomat*, July 9, 1936, 5.

68 See, for example, Virtanen, *Maidon, maitotuotteiden ja munien merkitys*, 8. The same aim was set in Norway. See Lyngø, "The National Nutrition Exhibition," 151. In the United States, the recommendation in the 1930s was approximately the same: one quart (0.94625 litres) for children and one pint (0.473 litres) for adults. See DuPuis, *Nature's Perfect Food*, 112.

69 Rahola, "Kotimaisten," 222; Anon., "Maitopropaganda," 5.

From 1935, the state granted money to the Pellervo Society to start advertising domestic animal-based products to increase their consumption. Moreover, it established Kotieläintuotteiden mainostoimikunta ('The Advertisement Committee of Domestic Animal Products') to lead these activities. Consequently, the funding for the Milk Propaganda Office was stopped. At first, the committee focused on the advertisement of poultry, pork and reindeer products, because the consumption of milk products was already high. In the late 1930s, the committee continued the promotion of milk products in a similar manner as had been carried out by the Milk Propaganda Office. This understandably fostered bitterness at the Federation of Whole Milk Producers.[70]

However, the Federation of Whole Milk Producers and the Advertisement Committee of Domestic Animal Products collaborated in the production of two milk promotional films.[71] *Maito – terveytemme lähde* ('Milk – A Source of our Health') and *Matin maitohuolet* ('Matti's Milk Worries') were both completed in 1938. The former, in particular, summarised the main arguments of milk promotion of the time. Milk was presented as a foodstuff that includes all the necessary nutrients in an easily digestible form. To illustrate the point, milk was contrasted with coffee, another favourite drink of Finns, which does not contain any energy nor nutrients. Coffee was regarded as being especially harmful for children, and milk was represented as a healthier option, making children strong and thriving. Moreover, the cleanliness and high hygienic standards of Finnish milk production were underlined. *Maito – terveytemme lähde* was apparently directed at consumers, as it declared the high quality and healthiness of Finnish milk. In contrast, *Matin maitohuolet* was addressed to farmers and also showed the unfavourable sides of cattle husbandry. In the film, a backward dairy farm and its undeveloped practices were shown, followed by a model farm with exemplary procedures. Importantly, these films also displayed the animals that were essential for milk production: cows were depicted grazing and being milked, and horses were shown pulling carts filled with milk churns. In addition to these films, Valio financed educational films with similar content, such as *Syö enemmän juustoa* ('Eat More Cheese') (1936), which showed the process of cheese making in detail and emphasised the nutritional value of the dairy product. As regards the Milk Propaganda Office, it was forced to end its activities in

70 Anon., "Maatalousministeriö on asettanut 425,000 mk Pellervo-seuran käytettäväksi kotieläintuotteiden mainostamiseen," *Karjatalous*, February 8, 1935, 98; Anon., "Kulutusmaidontuottajain toiminta v. 1938," *Maito*, January 1, 1939, 16–17; I.A.R., "Kotieläintuotteiden mainostoiminta," *Etelä-Saimaa*, April 2, 1938, 1.

71 Anon., "Kulutusmaidontuottajain toiminta," 17.

1938 due to a lack of funding.[72] Apparently, the Second World War also stopped the operations of the Advertisement Committee of Domestic Animal Products.

Conclusion

Establishing milk as an essential part of a healthy diet for everyone started in Finland in the early twentieth century, following an example begun in Northern European countries and the United States. Thus, drinking milk extensively is not a traditional custom in Finland, but rather a modern practice connected to the development of science, technology and urbanisation. As a result of these tendencies, formerly unpredictable material beings, such as bacteria, could be increasingly controlled by novel inventions and technologies that enabled milk preservation and transportation. However, as dairy husbandry had traditionally held significance in agrarian culture, the consumption of milk products was not unfamiliar to Finns. Furthermore, butter was already a highly appreciated foodstuff. These issues may have had an effect regarding the acceptance of widespread milk drinking. In the early twentieth century, increasing milk consumption was seen as a solution to solving the nutritional deficit of the impoverished part of the population. The rise in the consumption of milk may also be seen as part of the international trend of increased consumption of animal origin proteins, which has often been connected to the growth of people's income.[73] In Finland, between the world wars, the economy grew rapidly and in 1938, the GDP per capita reached the same level as in France and the Netherlands. Hence, a growing number of people could afford to consume animal-based products in their everyday life. At the same time, more than 50 percent of Finnish people still earned their living from agriculture and forestry, and consequently most of the population had easy access to fresh milk in the countryside.[74] For the primary milk producers, cows, the increase in milk consumption and the modernisation of cattle husbandry entailed higher requirements for milk yield, but also better feeding, as well as cleaner and lighter

72 Anon., "Kulutusmaidontuottajain toiminta," 16–17.

73 See, for example, Nicolau-Nos, Pujol-Andreu, and Hernández, "Milk, Social Acceptance of a New Food in Europe," 126.

74 See Meinander, *A History of Finland*, 184, 186.

living conditions. Through more effective breeding and feeding the bodies of the cows also started to change, making higher milk yields possible.[75]

In addition to the changing material circumstances that enabled increase in milk production and consumption, the appreciation of milk was discursively intertwined with civilisation and nationality. By increasing milk consumption, Finland could join the group of civilised Western countries, which was probably enticing for a state that had recently declared independence from Russia. Combining milk with health, wellbeing and strength in the promotional materials contributed to the project of nation building in a relatively new state. Moreover, the increase in milk consumption enhanced methods of cattle husbandry and the entire dairy industry as a whole. Furthermore, the role of the distinguished scientist A. I. Virtanen, the head of the Valio laboratories, should not be underestimated. His work in the development of cattle feeding, preserving milk products, as well as the exploration of the nutritional state of Finnish people was significant in itself. Yet, in addition to this he was also a devoted spokesperson for milk. It must also be remembered that the intensification of cattle husbandry led to an increasing amount of milk that had to be sold to consumers. This was another important factor behind the vigorous promotion of milk. As Inger Johanne Lyngø has pointed out, milk joined the interests of agriculture with novel scientific knowledge as well as the pursuits of agricultural and social policies.[76] It may be argued that solid ground for Finland's position at the top of the world's milk consumption statistics was established in the 1920s and 1930s.

75 See Kaarlenkaski, "Living Machines," 51–53.

76 Lyngø, "The National Nutrition Exhibition," 151.

Marja Jalava

3 Knowledge in the service of profit: Pig fattening performance testing in the first half of the twentieth century

Introduction

In 1938, Professor Rurik Pihkala, an expert in the discipline of Agricultural Economics at the University of Helsinki, enthused over a factory that converted potatoes into money. According to him, it was cheap to set up almost anywhere and could easily be scaled down if sales tapered off. As Pihkala was also a pedigree pig breeder and a leading light of the Finnish Pig Breeding Association (*Suomen Sianjalostusyhdistys*), it may come as no surprise that the factory he had in mind was a modern piggery. At the same time, however, he knew all too well that pig feeding was much more complicated than a simple input-output model. Potatoes were not identical as their nutritional value and starch content differed depending on the variety, soil and climatic factors, not to mention the pigs, known as the "machines" of the factory.[1] Thus, both experimental sciences and practical knowledge were needed for a profitable piggery.

This chapter explores pig fattening performance testing in Finland in the first half of the twentieth century. These experiments utilised scientific knowledge of animal heredity, nutrition and metabolism to raise new types of swine that would increase Finland's autarchy and produce bacon for export. I examine why, how and by whom the experiments were initiated and arranged, as well as what kind of new knowledge of pigs and pig farming they offered. On a more general level, I analyse the transformation of Finnish swine husbandry from domestic self-sufficiency to an animal industry with its related changes in pig–human relationships, which were an intrinsic part of such broad social and economic transformations as the spread of modern industrial capitalism, agricultural modernisation and the globalisation of the markets for agricultural produce. The speed of this shift should not be exagger-

1 Rurik Pihkala, "Suomen luontaiset edellytykset sikatalouden alalla muihin sikatalousmaihin verrattuna," *Sika* 54 (1938): 7, 14. Since the late 1800s, references to swine as machines that convert feed into meat became increasingly common. See, for example, Joseph Leslie Anderson, *Capitalist Pigs: Pigs, Pork, and Power in America* (Morgantown, WV: West Virginia University Press, 2019), 186.

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ated, for neither science-based breeding and feeding nor new markets transformed pigs and pig farming overnight. Finnish agriculture was dominated until the 1950s by smallholdings that owned less than ten hectares of land and only a few animals, which was very different from factory-scale pig production that emerged from the late 1960s.[2] Moreover, there were significant regional differences, because commercial pig farming was traditionally centred in the east and south of Finland.[3] Although the level of agricultural industrialisation[4] was low in interwar Finland, the ability of pigs to reproduce fast[5] nevertheless allowed breeders and pig husbandry experts to effectively modify the animals to suit new commercial needs. As the historian Abigail Woods has pointed out, we thus need a more historically situated understanding of agricultural modernity, which considers the variety and complexity of pathways to industrialisation in different settings.[6]

My approach to the theme is historical and qualitative. Publications, including guidebooks and research on pig farming and swine production, as well as the bulletins of the Finnish Pig Breeding Association (*Suomen Sianjalostusyhdistyksen Tiedonantoja*), known from 1938 as *Sika* ('The pig') and reports of the Pig Husbandry Experiment Station (*Sikatalouskoeasema*) are key sources that I examine using the contextual and interpretive analysis of texts and images. In terms of previous research, I have benefitted most from the works of the historians Chris Otter and Tiago Saraiva, who, among other things, discuss the science of animal feeding in

2 On the acceleration of Finnish pig production since the late 1960s, see Kari Suistoranta, *Lihan tähden kaikki työ. Lounais-Suomen Osuusteurastamo 1913–1988* (Jyväskylä: Gummerus, 1989), 131–134; Laura Puro and Veijo Åberg, *Lihatalonpojat ja heidän yhtiönsä. LSO, HKScan ja liha-alan muutos* (Helsinki: Edita and LSO Osuuskunta, 2012), 78–79. For more general studies, see Sam White, "From Globalized Pig Breeds to Capitalist Pigs: A Study in Animal Cultures and Evolutionary History," *Environmental History* 16:1 (2011): 110.

3 This was particularly the case during the era when Finland belonged to the Russian Empire as a grand duchy (1809–1917) and benefitted economically from the proximity of the imperial capital of St. Petersburg. It is beyond the scope of this chapter to discuss the regional differences of Finnish pig farming. See Rurik Pihkala, *Suomen sikatalous ja sen kehittäminen laiduntalouden perustalta* (Helsinki: Valtioneuvosto, 1924), 67; Teppo Vihola, "Pärjääkö pienviljelys?," in *Suomen maatalouden historia 2*, ed. by Matti Peltonen (Helsinki: SKS, 2004a), 172–173.

4 According to the environmental health scientist Ellen K. Silbergeld, fully industrialised livestock farming includes confinement, concentration and integration, that is, the adoption of a centralised organisational structure of ownership and profit. See Ellen K. Silbergeld, *Chickenizing Farms & Food: How Industrial Meat Production Endangers Workers, Animals, and Consumers* (Baltimore: Johns Hopkins University, 2016), 33–46.

5 A sow can produce two to three litters per year with a total often of more than 20 piglets. See, for example, Richard Lutwyche, *The Pig: A Natural History* (London: Ivy Press, 2019), 42–43, 94–98.

6 Abigail Woods, "Rethinking the History of Modern Agriculture: British Pig Production, c. 1910–65," *Twentieth Century British History* 23:2 (2012): 167–168.

Great Britain and pig fattening experiments in Germany, respectively.[7] Since these countries became Finland's most important trading partners and target export markets for Finnish swine producers in the interwar years, these studies are also useful in situating the case of Finland into emerging global agro-food systems.

On the theoretical level, I am inspired by neo-materialism and Human–Animal Studies (HAS). They seek to analyse discourses as intertwined with materiality as well as with embodied humans and other animals who are engaged in shared corporeal actions and mutual co-shaping in a multispecies society.[8] Consequently, I assume that the pigs were not mere objects of human action but also had agency of their own, that is, capacities to produce particular effects and incite other beings to act in a given situation. To be sure, human–pig relationships were characterised by radically asymmetrical relations of power, because humans increasingly aimed to control pigs' lives from birth to death. Fattening performance testing was a case in point, for it was based on a rigorously controlled regimen and conditions. Nevertheless, following the feminist theorist Donna Haraway, we may say that insofar as humans (with their machines) used pigs, they simultaneously had to adapt to these specific animals to learn to induce them to conform to human aims. Thereby, in Haraway's words, the animals, humans and machines are all enmeshed in hermeneutic labour by the material–semiotic requirements of getting on together in specific lifeworlds.[9]

In the following pages, I start by exploring the beginning of an "improved," "rational," "modern" and "scientific" system of pig farming in Finland. While the focus was initially on breeding, I will show why it soon shifted to feeding. In the second section, I discuss the adoption and practises of pig fattening performance testing in their historical context to show how they contributed to knowledge that was used in making pigs into industrialised organisms. In the penultimate section, I analyse the changes that these tests brought to the human–pig relationships and the new hierarchies that they created between pigs. Conclusions suggest that the small scale of Finnish pig farming in the first half of the twentieth century was not incompatible with efforts to commodify pigs into standardised products and objects of trade.

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7 Chris Otter, "Eating Animals," in *The Routledge Companion to Animal–Human History*, ed. by Hilda Kean and Philip Howell (New York: Routledge, 2019); Chris Otter, *Diet for a Large Planet: Industrial Britain, Food Systems, and World Ecology* (Chicago: The University of Chicago Press, 2020); Tiago Saraiva, *Fascist Pigs. Technoscientific Organisms and the History of Fascism* (Cambridge, MA: MIT Press, 2016).

8 See, for example, Donna Haraway, *When Species Meet* (Minneapolis: University of Minnesota Press, 2008); Taija Kaarlenkaski, "Living Machines with Gentle Looks: Materiality and Animal Body in Modernizing Finnish Animal Husbandry," *Humanimalia* 11:1 (2019): 31–33.

9 Haraway, *When Species Meet*, 262–263.

From breed to feed

In Finland, like many other parts of the world, the pig had been an intrinsic part of the economy of domestic self-sufficiency for centuries. Thus, households produced most goods that they needed for their own consumption. Pigs roamed free in farmyards, forests and by roadsides. They ate household refuse, other waste products and various sources of nutrition that they managed to find by themselves, such as weeds, wild berries, roots, worms and carcasses, even horse manure and human faeces during years of crop failure. Freely moving sows and boars also mated without human interference. According to Mikko Ilkka, a Finnish small-livestock caretaker and guidebook writer, pig husbandry was still in such a primordial state around 1900 in many regions of Finland that pigs were simply kept, but not cared for. Consequently, they grew up slowly and were slaughtered at an average age of two to three years, whereas the preferred slaughter age in the interwar period was six to seven months.[10] Cheap American pork and lard started to flow to Europe after the creation of the Chicago Union Stockyards in 1865, which rapidly became the largest livestock market and meatpacking hub in the world.[11] In Finland, at this time, swine production could not compete with the price and profitability of US imports. The pig population in Finland decreased from almost 230,000 individuals in the 1850s to approximately 155,000 in the 1880s. Hence, by the end of the nineteenth century, the country was dependent on imported lard.[12]

The first attempts to produce pigs that would gain weight more rapidly and be more fertile were taken in Finland in the latter part of the nineteenth century. This endeavour was launched at manors in Southern Finland by farmers that had shifted from grain to dairy production because of the decreasing world market price of the former crop. Thus, they had a readily available supply of protein rich waste products for pig feeding, such as skimmed milk and whey.[13] The initial focus was on breeding. For this purpose, various swine breeds had been imported and crossbred with local sows since the 1860s: boars of the Danish, Swedish and German Landrace, the German Edelschwein ('noble pig') and the Large White (also known as Yorkshire), Tamworth and Berkshire from Britain. At the same time, to cite an expression by Mikko Ilkka from 1912, "the golden freedom of pigs"

10 Mikko Ilkka, *Sianhoitokirja* (Helsinki: Otava, 1912), 7–11; Aarne Salokangas, *Sikatalouden tuotannon kohottamisesta* (Kangasala: Suomen sianjalostusyhdistys, 1930), 14; Vihola, "Pärjääkö pienviljelys?," 169–170.

11 Anderson, *Capitalist Pigs*, 126–129.

12 Vihola, "Pärjääkö pienviljelys?," 170–171.

13 Ilkka, *Sianhoitokirja*, 12. For the shift from grain to dairy farming in Finland, see Taija Kaarlenkaski's chapter in this volume.

came to an end, as they were increasingly kept in fenced pastures and locked in heated piggeries during the winter. However, the results remained modest from a pig farmer's point of view. Random crossbreeding led to unpredictable inherited characteristics, and most pig farmers still had to invest in commercial concentrated fodder or use cereals and potatoes that were also required to feed humans, if they wished to make a profit.[14]

In the eyes of Finnish agricultural experts, Finland's poorly developed swine production was a national disgrace compared to other Nordic countries, particularly Denmark that had started to export bacon to Britain in the 1860s, with the result that it ruled the market by the 1910s.[15] Following the initiative of the Central Federation of Finnish Agricultural Societies (*Suomen Maatalousseurojen Keskusliitto*), the Finnish Senate appointed a committee in 1907 to further the development of pig farming in the country. This resulted in the establishment of the Finnish Pig Breeding Association in 1908, which was comprised of wealthy pig farmers who had their own breeding centres, as well as agricultural scientists and agronomists who maintained a liaison with smallholders.[16] Simultaneously, the study of agronomy became an officially recognised academic discipline in Finland. This development highlighted the increasing need for science-based knowledge in agriculture and turned agronomists into highly esteemed professionals.[17] Once again, the focus was first on breeding, which the Pig Breeding Association wanted to rationalise by taking robust Finnish Landrace sows and fast-developing Yorkshire boars as the basis of systematic crossbreeding.[18] Consequently, separate stud-

14 Ilkka, *Sianhoitokirja*, 11–12; Aarne Salokangas, *Sianhoidon käsikirja* (Porvoo and Helsinki: WSOY, 1933a), 157–158; Vihola, "Pärjääkö pienviljelys?," 171–173.

15 Aimo Ilmarinen, "Toimenpiteet sianhoidon edistämiseksi," *Maatalous* 9 (1909): 202–203; Arvi Kontu, "Maailman silavamarkkinat," *Maatalous* 5 (1914): 101–103; Hannes Nylander, *Ohjeita sianhoidossa pienviljelijöille* (Porvoo: WSOY, 1914), 3; Einari Karvetti, *Baconkirja* (Helsinki: Pellervo-Seura, 1931), 5–7; Salokangas, *Sianhoidon käsikirja*, 9–10. See also David M. Higgins and Mads Mordhorst, "Bringing Home the 'Danish' Bacon: Food Chains, National Branding and Danish Supremacy over the British Bacon Market, c. 1900–1938," *Enterprise & Society* 16:1 (2015): 148–154.

16 *Komiteanmietintö 1909: N:o 2: Keisarilliselle Majesteetille Sianhoidon edistämistyön järjestämiseksi asetetulta komitealta* (Helsinki: Keisarillisen Senaatin kirjapaino, 1909); Aarne Salokangas, "Katsaus Suomen Sianjalostusyhdistyksen toimintaan vv. 1908–1933," *Suomen Sianjalostusyhdistyksen Tiedonantoja* 34 (1933b): 3–12.

17 Tero Halonen, *Maaseutuopistoista yliopistoon. Maatalous- ja metsätieteiden tutkimus- ja opetustoiminnan akatemisoitumisprosessi Helsingin yliopistossa vuoteen 1945* (PhD diss., University of Helsinki, 2010), 74–77, 122–126, 242.

18 The Finnish Landrace pig was already at this point a crossbreed of various Nordic Landraces, so it should not be confused with native pig population that became extinct in interwar Finland. See Kalle Maijala, *Jalostustyöllä tulosta. 100 vuotta naudan- ja sianjalostusta* (Helsinki: Suomen Kotieläinjalostusosuuskunta, 1998), 19–20.

books were founded for these two breeds in 1914 so as to gain maximum control over such inherited characteristics as fertility, milk output, nursing capacity, appearance, growth rate, cold-hardiness and slaughter value, that is, the amount of saleable carcase weight in relation to the pig's liveweight. Moreover, the Association encouraged small farmers to set up boar cooperatives to improve their "pig material."[19] As noted by Haraway, among others, this "paper-plus-flesh" system, in which data-keeping evolved with breeding, was part of general eugenic trends of the era, which strove for the alleged improvement of the nation via the control of both animal and human reproduction.[20]

Ultimately, however, the goals of pig breeding were dictated by the markets that also seemed to dictate the survival of the nation.[21] As the agronomist Aarne Salokangas, the long-term executive secretary of the Pig Breeding Association, put it in 1933, the only purpose of pig farming was to produce lard and pork in a profitable way. Therefore, two swine types were needed in Finland regardless of their breed: lard type pigs for the domestic market to offer a cheap energy source to manual labourers and, from 1936, for export to Nazi Germany where higher fat content was appreciated, and leaner bacon type pigs for the British export market and urban consumers at home.[22] Simultaneously, the focus shifted from breed to feed, for the more knowledge and experience was gained from breeding, the more obvious it became that the inherited traits of a certain pig breed only constituted the potential for good performance, whereas the eventual realisation of this breeding depended on proper feeding and care.[23] To cite Toivo Hossola, a fellow agronomist of Salokangas and a consultant hired by the Pig Breeding Association to advice smallholders, the pig farmer could make a decent profit from even the most randomly cross-bred or unbred pigs if their feeding was rationally planned

19 See, for example, Suomen Sianjalostusyhdistys, "Ohjesääntö Suomen Sianjalostusyhdistyksen kantakirjan pitoa varten," *Suomen Sianjalostusyhdistyksen Tiedonantoja* 1 (1921): 9–11; Toivo Hossola, *Sianhoidon opas* (Helsinki: Suomen Sianjalostusyhdistys, 1926), 4–11, 14–15; Salokangas, "Katsaus," 19–22.

20 Haraway, *When Species Meet*, 53. For an explicit connection between pig breeding and the need to apply selective breeding to Finnish pig farmers, see Toivo Aro, "Mens sana in corpore sano," *Suomen Urheilulehti* 16 (1912): 142.

21 Marja Jalava, "Lihansyönnin edistäminen Suomessa 1900-luvun alkupuolella," in *Tunteva tuote. Kuinka eläimistä tuli osa teollista tuotantoa?*, ed. by Taija Kaarlenkaski and Otto Latva (Tampere: Vastapaino, 2022), 105.

22 Salokangas, *Sianhoidon käsikirja*, 168–169; Aarne Ojala, "Mitä tuottajien on otettava huomioon alkaessamme sianlihanvientiä Saksaan?," *Suomen Sianjalostusyhdistyksen Tiedonantoja* 44 (1936): 19–26.

23 Toivo Terho, "Perinnöllisyys ja kotieläinten yleinen jalostusoppi," in *Maa ja metsä II: kotieläintuotanto*, ed. by Ilmari Poijärvi (Porvoo: WSOY, 1928), 34–35.

and organised. Alternatively, Hossola emphasised that the most carefully selected, pure-bred pig stock could fail to fulfil expectations without adequate nutrition.[24]

The shift from breed to feed was strengthened by the simultaneous development of the science of animal feeding alongside human dietetics. The formulation of the concept of metabolism and the discovery of glycogen biosynthesis marked a breakthrough in agricultural chemistry in the mid-nineteenth century. This revealed that carbohydrates, not proteins, were the main producers of fat, which made starches vital for pig feeding. Although farmers had known for centuries that certain feedstuffs, such as potatoes and maize, made pigs fatten faster, the proper understanding of the biochemical processes behind this phenomenon allowed the conscious crafting of diets designed to produce particular types of meat on a whole new level.[25] Moreover, scientific experiments facilitated the interchangeability of different fodders through the establishment of a common feed unit for measuring and comparing the nutritive value of feeds. In the Nordic countries, this was equal in nutritive value to one kilo of dry barley.[26] In the case of Finnish pig farming, which became based on raising either lard or bacon type pigs, these findings meant that the thickness of the pig's subcutaneous fat layer could be regulated more easily by adjusting the balance between carbohydrates and proteins in feed.[27]

As Finland was a latecomer in modern science-based pig farming, Finnish agricultural experts could utilise feeding experiments that had been performed in Denmark, Sweden and the United States since the 1860s.[28] Another important model was offered by German institutes of animal breeding, which were founded from the 1910s and soon enlarged to respond to an increasing interest in feeding.[29] In practice, however, the knowledge gained from these experiments could not be directly transferred from one country to another. First, the growing conditions for feedstuffs could vary greatly, which impacted on their nutritional value.[30] Second, most Finnish pig farmers were smallholders with scarce resources, so cheap and abundantly available domestic feed had to be prioritised in fattening tests.[31] Third, the fact that

24 Hossola, *Sianhoidon opas*, 15.

25 Otter, *Diet for a Large Planet*, 32–33, 167. For the dissemination of the results of the science of animal feeding in Finland, see, for example, Ilmari Poijärvi, "Eläinravitsemisen yleiset perusteet," in *Maa ja metsä II: kotieläintuotanto*, ed. by Ilmari Poijärvi (Porvoo: WSOY, 1928), 44–45, 54–56.

26 Yrjö Collan, *Sianhoidon oppikirja* (Porvoo: WSOY, 1931), 53–54.

27 Karvetti, *Baconkirja*, 41–46; Salokangas, *Sianhoidon käsikirja*, 39–43.

28 Collan, *Sianhoidon oppikirja*, 52; Anderson, *Capitalist Pigs*, 188–189.

29 Saraiva, *Fascist Pigs*, 106–108; Toivo Hossola, "Saksan sianhoito-oloista," *Suomen Sianjalostusyhdistyksen Tiedonantoja* 5 (1924b): 13–16. For the central role of Germany in Finnish agricultural research from 1870 to 1939, see also Halonen, *Maaseutuopistoista yliopistoon*, 290–291.

30 Salokangas, *Sianhoidon käsikirja*, 52.

31 Ilkka, *Sianhoitokirja*, 53.

the pig is an omnivorous being was a strength, but also a potential source of countless feeding mistakes. This is because everything that a pig eats has an effect on the colour, taste, smell and consistency of meat. For example, too much maize or tannery waste could cause an unwanted yellow shade on bacon. What is more, too much fishmeal resulted in a fishy smell and taste. Furthermore, too much soybean meal, sunflower seed cakes or ricemeal made the consistency of the pig's back fat too soft.[32] Finally, a major reason for moving to fattening performance testing in Finland was that feed conversion efficiency, that is, the efficiency with which a pig converts feed into meat, which has a high heritability, could only be measured precisely on an individual animal. In Hossola's words, this kind of "production monitoring" was absolutely essential for profitable swine husbandry, for no farmer could afford to keep pigs that did not "pay back feed given to them."[33]

Putting the nation's pigs to the test

The first small-scale pig fattening test was carried out in Finland soon after the founding of the Pig Breeding Association in 1908. The test was conducted in the Kotiniemi reformatory that housed about a hundred underage offenders and had a large cowhouse and piggery to feed them. In the test that was arranged at the turn of 1908 to 1909, Finnish Landrace piglets and crossbreeds of Landrace and Large White pigs were compared to find out how much weight they gained with the same amount of feed over the course of a few months. However, since the groups were small and some pigs became ill during the test, it was difficult to draw any conclusions.[34] Only after receiving a small government subsidy in November 1910, was the Pig Breeding Association able to conduct more extensive pig fattening performance tests in 1911 and 1915 in cooperation with private farmers from manors. This time the piglets were divided into three groups: Finnish Landrace, Large White Yorkshires and their crossbreed, and they were all fattened until they weighed 125 kilos. The amount and price of their feed was then carefully calculated and compared with the profit earned after their slaughter. The result seemed to demonstrate that the crossbred pigs were the best "utility animals."[35] However, as the First World

32 See, for example, Hossola, *Sianhoidon opas*, 16–17; Karvetti, *Baconkirja*, 24–29, 52–54. See also Otter, "Eating Animals," 479.

33 Hossola, *Sianhoidon opas*, 7–8.

34 Anon., "Maatiaissikain kyntömailta," *Aamulehti*, August 22, 1911.

35 Yrjö Collan, "Suomen Sianjalostusyhdistyksen järjestämät ruokintakokeet v:na 1915," *Maatalouden karjanhoitolehti* 2 (1916): 19–21; Salokangas, "Katsaus," 4, 25–26.

War soon led to the compulsory cession of livestock for the army and a worsening deficiency in foodstuffs, the experiments could not be continued.[36]

The next round of feeding experiments, beginning in 1920, took place in a completely changed situation. Finland had become independent in 1917 in the aftermath of the Bolshevik Revolution in Russia. The acute experience of hunger during the First World War led to civil disorder in 1917, which was an important cause of the outbreak of the devastating Finnish Civil War of 1918, in which the bourgeois White troops crushed the leftist Red forces. In interwar Finland, self-sufficiency in foodstuffs was thus adopted as a primary objective. To achieve this goal, the government carried legislative changes, such as the imposition of an import duty on living animals and meat in 1919 and an export subsidy on pork in 1928. Moreover, extensive land reforms were implemented in the 1920s, which resulted in the creation of over 130,000 new small farms with a 30 percent increase in the volume of cultivated land by the end of the 1930s.[37]

On an ideological level, agrarianism and peasantist images dominated much of the literature and public discussion of the period. On the one hand, this was a conservative reaction to the Civil War. The victorious White side considered the allegedly hard-working, god-fearing and law-abiding family farmers to be the healthy backbone of the Finnish nation. On the other hand, however, agrarianism stemmed from prevailing social conditions. As some 60 percent of the Finnish population worked in the agrarian sector in 1930, and 68 percent of these labourers were farmers and members of farming families, the focus on their livelihood was one of the main prerequisites for social stability.[38] Agrarianism hence included a pragmatic developmental programme, in which farmers, cooperatives and other agricultural organisations negotiated agricultural policy and other issues of rural welfare.[39]

36 Jari Ojala and Ilkka Nummela, "Feeding Economic Growth: Agriculture," in *The Road to Prosperity: An Economic History of Finland,* ed. by Jari Ojala, Jari Elomaa and Jukka Jalava (Helsinki: SKS, 2006), 73.

37 Teppo Vihola, "Maatalouden rakennemuutokset itsenäisessä Suomessa," in *Suomen maatalouden historia 2*, ed. by Matti Peltonen (Helsinki: SKS, 2004b), 374–377; Ojala and Nummela, "Feeding Economic Growth," 73, 77–78.

38 Risto Alapuro, "Mass Support for Fascism in Finland," in *Who Were the Fascists? Social Roots of European Fascism*, ed. by Stein Ugelvik Larsen, Bernt Hagtvet and Jan Petter Myklebust (Oslo: Universitetsforlaget, 1980), 679–684; David Kirby, *A Concise History of Finland* (Cambridge: Cambridge University Press, 2006), 186–188.

39 Mary Hilson, Pirjo Markkola and Ann-Catrin Östman, "Introduction: Co-operatives and the Social Question," in *Co-operatives and the Social Question: The Co-operative Movement in Northern and Eastern Europe (1880–1950)*, ed. by Mary Hilson, Pirjo Markkola and Ann-Catrin Östman (Cardiff: Welsh Academic Press, 2012), 12–15.

In this young republic of small farmers, pigs were a part of the national survival strategy and actors of agricultural modernisation. Although smallholders mostly earned their living from diverse sources, the meat cooperatives managed to keep producer prices at a reasonable level so that farmers could market their few extra animals for a profit. At the same time, a state-financed export subsidy on pork made it possible to trade in a relatively open market economy without having to bear the full economic risks of a private entrepreneur.[40] As the bulletin of the Finnish Pig Breeding Association envisioned in 1921, this would mean that even a few more pigs per smallholding could guarantee Finland's self-sufficiency in pork and lard and also produce as much as 16 million kilos of pork for export each year.[41] This was a bold vision, but not entirely unrealistic. By the beginning of the 1930s, Finnish swine production had already exceeded domestic demand and the country was a significant exporter of pork with a swine population of about 519,000.[42]

The 1920s were also a decade of change in Finland in terms of pig fattening performance testing. As pig farming became more market-oriented, it was crucial to produce more flesh from less feed in a shorter amount of time.[43] In this respect, the efforts to enter the British export market for bacon presented a special challenge. Britain had promoted the industrial-agricultural division of labour on a global scale since the nineteenth century, which had made it the world's biggest importer of foodstuffs. Simultaneously, as Chris Otter remarks, it was among the first places on Earth to undergo the nutrition transition towards "meatification." By the early twentieth century, it consumed the most meat in Europe, and in 1930, with under three percent of the world's population, it imported 99 percent of the world's exports of ham and bacon.[44] This trend had already been noticed in Finland in the 1910s with the suggestion that Finnish pig farmers should follow the lucrative Danish example of exporting bacon.[45] The first attempt was undertaken by the *Lounais-Suomen Osuusteurastamo* cooperative slaughterhouse in 1922 with disappointing results. Indeed, its bacon production line ceased altogether already in 1923 and was only restarted in 1930. Although there were several reasons for this failure,[46] a major problem was that this type of lean, salt-cured meat cut was so unknown in

40 Teppo Vihola, "Maatalouden rakennemuutokset," 374–377; Ojala and Nummela, "Feeding Economic Growth," 80–81.

41 Anon., "Tehtävämme," *Suomen Sianjalostusyhdistyksen Tiedonantoja* 1 (1921): 3.

42 Suistoranta, *Lihan tähden*, 47; Halonen, *Maaseutuopistoista yliopistoon*, 241.

43 Toivo Hossola, "Sikatalouden kannattavaisuuteen vaikuttavista seikoista," *Suomen Sianjalostusyhdistyksen Tiedonantoja* 5 (1924a): 4–5. See also Otter, "Eating Animals," 479.

44 Otter, *Diet for a Large Planet*, 5–12.

45 Kontu, "Maailman silavamarkkinat," 101–103.

46 Suistoranta, *Lihan tähden*, 52–54.

Finland that there was not even a Finnish word for it before a naming competition in 1930.[47] The same applied to the proper type of swine, for the sturdily built Finnish Landrace pigs, with their thick back fat, did not meet British standards.[48] As the prosperity of the Danish bacon industry was based on standardised "bacon pigs," whose porcine life was profoundly shaped by the dictates of the international market, it was highly desirable for Finnish swine producers and experts to launch extensive Danish-type pig fattening performance testing to transform pigs in Finland into successful objects of trade.[49]

Danish-type testing involved long-term feeding experiments with a large number of animals monitored under meticulously controlled conditions. The best-known tests of this kind had been initiated by the Danish agricultural scientist Niels Johannes Fjord in his brand new agro-economic research laboratory in Copenhagen in 1883. The results and methods had afterwards been reassessed and further complemented with repeated testing in several European countries.[50] The Finnish Pig Breeding Association adopted Danish-type testing as the basis of its fattening tests in 1920.[51] The Association lacked a permanent testing centre and other necessary resources, however, which led to a governmental decision to establish the state-funded Pig Husbandry Experiment Station in 1924. Once again, Denmark served as a model to Finland, as such an experiment station had been in operation in the country from 1907.[52] The Finnish Experiment Station was located on the outskirts of Helsinki, alongside the main railway line running northwards. This allowed for the effective transportation of pigs from the interior of Finland, as well as their slaughter and subsequent inspection at the modern abattoir of the *Suomen Karjakeskuskunta* national meat cooperative in Helsinki (Figure 3.1). On May 10, 1926, the first piglets arrived in the station for testing.[53]

47 Anon., "Bacon ja kinkku suomalaistuvat," *Suomen Sianjalostusyhdistyksen Tiedonantoja* 23 (1930): 32–34; Anon., "Bacon on suomeksi pekoni," *Aamulehti*, November 13, 1931.

48 Karvetti, *Baconkirja*, 12–15.

49 Aarne Ojala, "Bacon-herkkusilava," *Suomen Sianjalostusyhdistyksen Tiedonantoja* 20 (1930): 14–17; Otter, "Eating Animals," 478–479.

50 Collan, *Sianhoidon oppikirja*, 52–53; Claus Bjørn, "N. J. Fjord," in *Dansk Biografisk Leksikon* at lex.dk, last modified July 17, 2011, https://biografiskleksikon.lex.dk/N._J._Fjord; Saraiva, *Fascist Pigs*, 107–113.

51 See, for example, Pihkala, *Suomen sikatalous*, 44–51; Aarne Salokangas, "Sikojen lihotuskokeet Santamäessä kesällä 1923," *Suomen Sianjalostusyhdistyksen Tiedonantoja* 3 (1923): 25–39; Salokangas, "Katsaus," 26.

52 Aarne Salokangas, "Huomioita sianhoidon edistämistoimenpiteistä Ruotsissa, Tanskassa ja Suomessa," in the offprint of *Toinen maatalousvihko* (Porvoo: WSOY, 1922), 260–262.

53 Solmu Parkku, *Kertomus sikatalouskoeasemalla tehdyistä lihotussikojen tuotantotarkkailukokeista v. 1926* (Helsinki: Valtioneuvosto, 1927), 5–8.

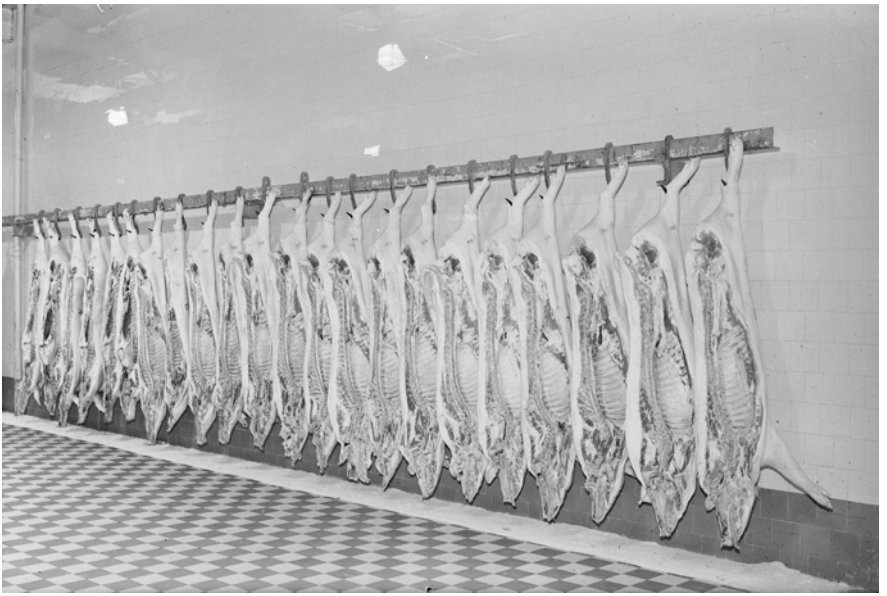

Figure 3.1: Pig carcasses at the *Suomen Karjakeskuskunta* meat cooperative slaughterhouse in 1936. Photo by Studio Pietinen. Identifier: HK19670603:25837. Finnish Heritage Agency, Collection of Historical Images. CC BY 4.0.

Pig fattening performance tests at the Pig Husbandry Experiment Station followed the same basic design. Each experiment included dozens of groups of swine that mostly originated from commercial breeding centres and wealthy farms. Each group of four was chosen from the same litter and consisted of two castrated males and two sows. They were brought to the station when they reached about two months of age and a weight of 15 to 20 kilos. After adaptation to the new environment, the test began by feeding the pigs carefully chosen and measured feedstuffs and measuring their weight at regular intervals. The test concluded when the pigs had reached an optimal slaughter weight of 90 to 100 kilos. In the end, three pigs from each litter – two males and one sow – were slaughtered and their carcass data (fat/meat proportion, the weight of the main butcher parts and the percentage of wasted mass) were recorded and rated. If the litter was ranked with a high "utility value," the surviving sow was sent back its owner to be used in breeding.[54]

54 Parkku, *Kertomus*, 8; Collan, *Sianhoidon* oppikirja, 52–53; Salokangas, *Sianhoidon käsikirja*, 270–272. See also Saraiva, *Fascist Pigs*, 113.

Compared to the first modest fattening tests in Finland, these interwar experiments at the Pig Husbandry Experiment Station offered a much more effective method of comparing the performance of the Finnish Landrace, the Large White of Yorkshire and crossbred pigs. After testing a sufficient number of pigs, it was also possible to establish a standard performance for each breed and identify the most promising bloodlines among the member herds, such as the lineages of the Finnish Landrace sow Kaisa (studbook number SM 177) and the Yorkshire boar Pentti (studbook number SY 183), which were exceptionally efficient in turning feed into meat. These results helped pig farmers to choose the most suitable breed and bloodline depending on whether their preferred "product line" was lard or bacon. Moreover, the experiments tried to establish correlations between certain external properties and the performance of the pigs so that smallholders without specialist equipment were better able to evaluate the bodily proportions of pigs with their own eyes.[55]

In addition to breeds, bloodlines and individual pigs, the tests compared different feeds – for instance, skimmed milk to buttermilk; dried potato flakes to cooked potatoes; and molasses to wood sugar syrup – to find out the optimal quantity and quality of feed needed for swine to reach market weight.[56] In this manner swine husbandry experts were able to create detailed feeding plans for different commercial purposes. With the help of these plans, even smallholders with just a few potential piglets could produce pigs suitable to produce bacon, if they only carefully followed the instructions.[57] In short, pig fattening performance testing made pigs into industrialised organisms. They became manageable and measurable research objects and commodities of trade, while also combining research on heredity with research on diets, which brought together humans, animals and the environment.[58]

The new hierarchy of exploitation and care

Nevertheless, as previous research on modernising animal husbandry has pointed out, intensified exploitation was entangled with care, which required a new kind of mutual, if unidentical, coadaptation in human–livestock relations. At the same time as these relations became increasingly instrumentalised and animals were objecti-

55 Salokangas, *Sianhoidon käsikirja*, 271–273; Saraiva, *Fascist Pigs*, 112–119.

56 See, for example, Anon., "Sikatalouskoeasemalla," *Suomen Sianjalostusyhdistyksen tiedonantoja* 36 (1934): 17–24.

57 Artturi Penttilä, "Perusruokintasuunnitelma," *Suomen Sianjalostusyhdistyksen tiedonantoja* 39 (1934): 13–16.

58 See also Saraiva, *Fascist Pigs*, 108, 113.

fied to commodities, pig farmers were also encouraged to offer their animals better foodstuffs, hygiene and general living conditions. In some respects, this improved their health and welfare – that is to say, at least until the emergence of factory farms in the 1960s. Thus, livestock had an ambiguous and shifting status, and swine farmers and agricultural experts constantly negotiated the fine line between pigs as sentient beings and tools of the trade.[59] To give an example, in the open-air system with several fenced pastures, which was considered the cheapest way of feeding pigs in interwar Finland, the pigs stubbornly wanted to sleep in one and the same shelter where they felt safe. If prevented from doing this, they broke the fences between the pastures or simply refused to enter an unfamiliar shelter. The pig farmer thus had to exercise pasture management if he wished to avoid such issues.[60]

This ambivalence of exploitation and care was also a prevalent feature in pig fattening performance testing. On the one hand, swine husbandry experts repeatedly emphasised that the sole purpose of pig keeping was economic profit, which the smallholders used to subsistence economy did not seem to fully understand. Yet, on the other hand, experts also stressed that pigs were living beings that deserved loving treatment and care. Moreover, their individuality was acknowledged by the request that they should be called by individual names.[61] While we may certainly argue that handling pigs in a respectful manner had an instrumental purpose, because it enhanced their docility and made it easier for humans to handle them in practises, such as regular weighing,[62] this would not have been possible without pigs' agency. This was based on capacities that included their ability to comprehend symbolic language, recognise their conspecifics and humans (Figure 3.2), show cognitive empathy and establish a strong attachment to their handlers.[63]

In the present-day discussion on animal rights, it is often emphasised that meat is "food with a face," with the assumption that people would cease eating meat if they understood the cognitive complexity of animals.[64] For Finnish swine husbandry experts, however, the case seemed to be the opposite. Pigs had traditionally been considered low status "dirty" animals that adapted themselves to meagre

59 Rhoda M. Wilkie, *Livestock/Deathstock: Working with Farm Animals from Birth to Slaughter* (Philadelphia: Temple University Press, 2010), 123–126, 133–135; Kaarlenkaski, "Living Machines," 52–53. See also Haraway, *When Species Meet*, 262–263.

60 Pihkala, *Suomen sikatalous*, 51–53.

61 Hossola, *Sianhoidon opas*, 54–57; Collan, *Sianhoidon oppikirja*, 99; Salokangas, *Sianhoidon käsikirja*, 223–227. See also Woods, "Rethinking Modern Agriculture," 187–191.

62 This was explicitly pointed out in Salokangas, *Sianhoidon käsikirja*, 227.

63 For the cognitive complexity of domestic pigs, see Lori Marino and Christina M. Colvin, "Thinking Pigs: A Comparative Review of Cognition, Emotion, and Personality in *Sus domesticus*," *International Journal of Comparative Psychology* 28:1 (2015): 1–27.

64 See, for example, Wilkie, *Livestock/Deathstock*, 133–134.

Figure 3.2: Anni Kyytinen with a piglet in her arms, the village of Särkijärvi in the municipality of Kurkijoki in the 1930s. Photo by Pekka Kyytinen. Identifier: KK5596:29.SJ.49. Finnish Heritage Agency, Collection of Ethnographic Images. CC BY 4.0.

conditions. Moreover, many people kept on challenging the commercial potential of the piggery business in interwar Finland.[65] Thus, experts were eager to highlight pigs' personality and cognitive skills as a part of a strategy to increase their status as farmed animals. For example, the bulletin of the Finnish Pig Breeding Association published little stories about clever and lovable swine, such as Pelle the ship's piglet, who was the apple of the crew's eye.[66] This publication also informed readers about the tidy and "talkative" Pirkko, who was as smart as a puppy,[67] and the most beautiful and good-natured sow Mosse, who was chosen to be the foremother of the modern pig stock in Lapland.[68]

On closer inspection, some pigs were indeed more equal than others, for the knowledge gained from feeding experiments constituted new hierarchies be-

65 See, for example, Anon., "Tehtävämme," *Suomen Sianjalostusyhdistyksen Tiedonantoja* 1 (1921): 3–5.

66 Anon., "Pelle, laivaporsas," *Suomen Sianjalostusyhdistyksen Tiedonantoja* 9 (1925): 14–17.

67 Kerhotäti, "Kerhoporsaista," *Suomen Sianjalostusyhdistyksen Tiedonantoja* 20 (1930): 36–37.

68 Aili Mustakallio, "Sieppijärven sian ihmeelliset seikkailut," *Sika* 52 (1938): 33–36.

tween them. At the apex of this pyramid were purebred Landrace and particularly Yorkshire boars that were registered in the studbook and used for breeding. As the agronomist Yrjö Collan put it, one sow produced at best 20 to 30 piglets per year, whereas a boar could leave its mark on about a thousand offspring. Thus, these boars had to have all the qualities of an excellent pig in terms of performance, heredity, appearance and characteristics. Consequently, they were usually expensive and carefully looked after, and the most profitable ones could live a relatively long life for farmed animals of up to eight years, although wild boar can live up to 25 years. These specimens were particularly prized before artificial insemination became widespread in Finland in the 1960s.[69] In the second category were Yorkshire and Landrace sows that had high fertility, even-sized litters, a good nursing capacity and strong maternal instincts, yet without being overprotective and aggressive towards humans. They could live up to ten years, if they remained fertile and productive.[70] The bulletin of the Pig Breeding Association also published short biographies of these boars and sows, which included their names, photographs, information about their achievements and small anecdotes about their lives.[71] However, the great majority of swine, particularly those who were "crossbred for use," were raised for meat, and thus were valued solely according to their commercial properties and slaughtered at the age of seven to nine months at the latest.[72] Even they were recognised as sentient, but, in the end, they were mere sentient commodities.[73]

Conclusion

The historian Abigail Woods has argued that the historiography of twentieth-century livestock production often tells an all-too-straightforward story of industrialisation, which is teleological in the sense that it regards intensive farming in enclosed large-scale feeding units as an end point and sets out to determine how it was reached.[74] Finland offers a case in point to revise such a linear account.

69 Collan, *Sianhoidon oppikirja*, 38–39; Maijala, *Jalostustyöllä tulosta*, 48. For the average "natural" life expectancy of pigs, see Lutwyche, *The Pig*, 38.

70 Collan, *Sianhoidon oppikirja*, 40–41; Salokangas, *Sianhoidon käsikirja*, 192.

71 See, for example, Aarne Salokangas, "SM 12 Pommi," *Suomen Sianjalostusyhdistyksen tiedonantoja* 6 (1924): 12–14; Anon., "Pieniä kuulumisia," *Suomen Sianjalostusyhdistyksen tiedonantoja* 16 (1928): 27.

72 Salokangas, *Sianhoidon käsikirja*, 258; Karvetti, *Baconkirja*, 78.

73 Cf. Wilkie, *Livestock/Deathstock*, 123.

74 Woods, "Rethinking Modern Agriculture," 166–167.

While the extensive land reforms created more than 100,000 new small farms in the country during the 1920s, the breakthrough of such industrial values as efficiency, productivity and profitability took place in conditions where small-scale farms with open-air fenced pastures for pigs were in fact significantly increasing in number instead of giving way to factory-scale confinement and concentration. As the application of knowledge gained from feeding experiments shows, even in these small farms it was entirely possible to handle pigs as raw material to be exploited in the process of producing standardised industrial objects and tools of the trade.

When considering different patterns of the modernisation of pig farming on the European level, Germany and Denmark can be taken as the opposite extremes. As Tiago Saraiva has argued, the Nazi regime strove for autarchy by producing lard type "fascist pigs" that lived on German land, ate only German feed and were fattened to be consumed by Germans alone. Danish bacon pigs, by contrast, to cite Chris Otter, were "capitalist pigs," whose being was a product of a completely different biological, spatial and economic logic. They ate imported feed, fed overseas stomachs in Britain, provided protein predominantly and relied on fossil-powered agromodernisation in their material existence.[75]

Finnish interwar swine husbandry, for its part, made use of both logics, for it aimed to attain the national self-sufficiency of pork and lard, but also to capture a share of the export markets for bacon and lard. While all these countries utilised similar feeding experiments and performance records, their different goals, practises and political conditions nevertheless led to alternative agricultural modernisation processes. Ultimately, Finnish pigs were a materialisation of a political project that aimed to maintain social stability within a republic of small farmers, so that they could be called "nationalist pigs."

75 Saraiva, *Fascist Pigs*, 133–135; Otter, *Diet for a Large Planet*, 30.

Helinä Ääri

4 Women who love chickens: Gender and interspecies care in Finnish small-scale egg farming guides

Introduction

In 1913, 20 farmwives held a meeting at a local dairy in Alastaro, in southwest Finland. At this meeting they established an egg cooperative. They agreed upon the rules of the cooperative and elected a board of directors. However, the governor of the region did not accept these rules, as all the founders and the directors of the cooperative were women and they had not sent him the necessary letters of attorney from their husbands. The women had to resubmit their application and assure the governor that they were fully in charge of their henhouses. Finally, the governor ratified the rules, and the co-op was ready to work.[1]

The history of the female chicken farmers of Alastaro is related by the farming consultant Niilo Rautakoski in his chicken-keeping guide entitled *Kananhoito kannattaa* ('Chicken Farming Pays'), published in 1931. Rautakoski describes the egg co-op as one of the most successful of its kind in Finland and speaks highly of their practices: "When one observes the reception of the eggs in Munala [the name of the co-op's house], one notes how it happens as calmly and systematically as in any office."[2] Rautakoski encouraged his readers to form egg co-ops like the one in Alastaro.

Chicken farming increased in Finland from the end of the nineteenth century. Up until this time Finns rarely owned more than a few chickens, and the total number of chickens in Finland was small.[3] At the end of the 1870s, for example, there were about 170,000 chickens in Finland. This increased to nearly 540,000 chickens

1 Niilo Rautakoski, *Kananhoito kannattaa* (Helsinki: Pellervo-seura, 1931), 60–61; J. K:wi, "Munanmyyntiosuuskunnat siipikarjanhoidon edistäjinä," *Siipikarja* 4 (1919): 50.

2 Rautakoski, *Kananhoito kannattaa*, 61. All citations from texts that are originally in Finnish have been translated by the author. All italics in the citations are as in the original.

3 Auli Bläuer, *Voita, villaa ja vetoeläimiä* (Turku: Turun yliopisto, 2015), 145–148; Teppo Vihola, "Pärjääkö pienviljelys?," in *Suomen maatalouden historia 2*, ed. by Matti Peltonen. (Helsinki: SKS, 2004a), 175.

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by 1905 and 980,000 in 1920.[4] By 1935 there were nearly 2.6 million chickens.[5] In the 1910s, the economic significance of chicken keeping was still marginal because there were relatively few chickens and they did not lay very many eggs.[6] The guides indicate that good hens laid between 120 to 200 eggs a year, but many laid considerably less. Until the First World War, Finland received a lot of eggs from within other areas of the Russian Empire, and, as Jari Niemelä writes, hardly anybody in Finland was interested in keeping chickens.[7] In 1919, the newly independent Finland imposed a duty on eggs. Shops emptied of cheap Russian eggs, and consequently, egg farming started to interest more farmers. Export of Finnish eggs started at the beginning of the 1920s, and the export subsidies for egg producers, introduced in 1928, increased the attractiveness of egg farming more.[8] During the 1920s and 1930s, egg farming became an important agricultural sector in Finland. Much of this was due to generous export subsidies.[9] In most cases, egg farming formed a part of small-scale family farming.[10]

Many people attempted chicken farming for the first time in the years after the First World War at a time when not a lot of education and literature on the matter were available. Many of the new chicken farmers did not prosper. Consequently, between the 1910s and 1930s, poultry keeping spokespersons and associations published many books and leaflets promoting egg farming as a profitable enterprise. Rautakoski's description of the episode about the female chicken farmers of Alastaro is a good example of this trend: he wrote many pages about the economic success of the egg co-op and invited his readers to follow suit.

Rautakoski's description also repeats another common message in the poultry literature of the time: women were the pioneers of the egg industry in many places, and poultry farming was an important area in which women living in agrarian communities could gain economic and political agency.[11] Not only did women work as egg farmers on small-scale family farms and form co-ops, but they also worked as itinerant poultry-keeping consultants. Furthermore, they

4 Vihola, "Pärjääkö pienviljelys?," 175; Jari Niemelä, *Talonpoika toimessaan* (Helsinki: SKS, 2008), 179.

5 Teppo Vihola, "Maatalouden rakennemuutokset itsenäisessä Suomessa," in *Suomen maatalouden historia 2*, ed. by Matti Peltonen. (Helsinki: SKS, 2004b), 345.

6 Vihola, "Maatalouden rakennemuutokset," 176.

7 Niemelä, *Talonpoika*, 163.

8 Niemelä, *Talonpoika*, 163–164; Vihola, "Maatalouden rakennemuutokset," 374–375.

9 Niemelä, *Talonpoika,* 180.

10 Vihola, "Maatalouden rakennemuutokset," 377.

11 Caring for cows, milking them and processing the milk was another area in which women gained agency in agrarian communities; see Taija Kaarlenkaski, "Of Cows and Women: Gendered Human-Animal Relationships in Finnish Agriculture," *Relations* 11 (2014): 9–26.

worked as teachers in a poultry farming school, wrote books and leaflets about chicken keeping, and edited poultry magazines.

In this chapter I examine, in a literary studies framework, eight poultry keeping guides published between 1916 and 1931. Five of them are books and three are booklets. All of them are targeted to small-scale family farmers. In terms of methodology, I draw on articulation theory, which focuses on connections between different discourses.[12] I ask how the guides talk about how gender equality and the position of small farmers develops entangled with the egg-industry in Finland. In other words, I ask how the growing exploitation of chickens, the broadening scope for action for women and the growing small farming economy interweave in these guides. How did the position of chickens, the position of small farmers and the position of women on those farms change differently but entangled and simultaneously? I focus especially on practises of human–avian love and care, as the guides often emphasise the importance of lovingly caring for the chickens. The understanding of care in the guides is tightly bound to their genre: they are written in order to highlight the best way to utilise chickens, and consequently care is coupled with exploitation.

The oldest guide I examine is by the teacher and consultant, Olga Autere, and is entitled *Kansan emännän kanakirja* ('The Farmwife's Hen Book,' fig. 4.1.), published in 1916 by the Martha Organisation, a home economics body for which the author worked. The next five guides are from the 1920s. Two of them are written by Autere: *Pojat ja tytöt kanoja hoitamassa* ('Boys and Girls Keeping Chickens,' 1922) and *Pienviljelijä ja kananhoito* ('The Smallholder Farmer and Chicken Husbandry,' 1923). The third book, *Kananhoidon käsikirja* ('The Handbook of Chicken Husbandry,' 1924), is by the journalist, farming consultant and politician Jaakko Kivi and the geographer, writer and politician Kaarlo Hänninen. The fourth guide from the 1920s, *Pienviljelijän kananhoito eli käynti Kana-Kaisan luona* ('Smallholder Farmers' Chicken Keeping, or a Visit to Hen-Kaisa,' 1925) is by four authors: the chicken husbandry consultant Siiri Siikaniemi, the agronomist and the head of a poultry-keeping school Ilmari Relander, the poultry farming teacher Matti M. Ilkka and the chicken husbandry consultant Jaakko Kaila. The fifth book from the 1920s is *Pieni kananhoidon opas* ('A Small Guide to Chicken Husbandry,' 1929), by ten authors, among them the agronomist and teacher Martta Bruun, the architect Katri Jansson, the doctor of agriculture and forestry Erik Bruun, as well as Siiri Siikaniemi, Matti M. Ilkka, Jaakko Kaila and four other chicken farmers. From the 1930s I study two guides: Ilmari Relander's *Kananhoidon alkuopas* ('The Beginner's Guide to Chicken Husbandry,' 1931) and the above-mentioned *Kananhoito kannattaa* ('Chicken Farming Pays,' 1931) by Niilo Rautakoski.

12 Kukku Melkas, *Historia, halu ja tiedon käärme* (Helsinki: SKS, 2006), 27–28.

Gender in this chapter is understood as a difference produced in social relations and something that interlocks with other differences.[13] The guides I have examined describe gender as a male/female-dichotomy. In the guides, chicken husbandry is understood as work that requires performing many small jobs in the henhouse throughout the day: It is recommended that chickens should be fed 4 to 6 times a day if possible; eggs had to be collected at least once a day and more often if trap nests were used; heating stoves had to be used most of the year to keep the chickens warm; the henhouse had to be aired and lit depending on the weather and the season. Moreover, henhouses with all their equipment had to be kept clean and tidy; bookkeeping had to be done precisely; and preparing food for chickens also took a lot of work. Furthermore, poultry farming entailed breeding chickens, caring for the sick ones, and growing, collecting, or buying crops and vegetables for them.

Chicken farming consisted of several daily duties and hence it was mainly promoted for the benefit of smallholder farmers, as they worked mainly at home and could therefore go to their henhouses many times a day. Among smallholder farmers it was especially recommended for women, who usually bore the main responsibility for animal husbandry.[14]

Other reasons for recommending chicken keeping for smallholder farmers were that it was possible to start with smaller initial capital and less land than most other forms of animal farming. Thus, it was even possible for former crofters and cottars. Even the smallest farms were able to produce at least some food scraps and edible weeds that could be fed to chickens. On the other hand, if a farmer owned woods, as many did, it was relatively inexpensive to build a henhouse and a wooden pen – a custom recommended in many of the guides. The work and time of smallholder farmers and especially the farmwives were not considered a cost. Therefore, the guides promoted chicken keeping as a very cost-effective form of animal husbandry in small farms.

Hence, when I talk about women in this chapter I have in mind mostly the women of smallholder farms in agrarian areas, mostly in the south and west of Finland. Chicken husbandry up to the present day is concentrated in these regions. As it was physically light work, chicken keeping was also considered as being suitable for the elderly and children. Consequently, chicken keeping offered women, the young and the elderly the chance to raise the degree of self-sufficiency of the farm. They were also able to earn money by selling eggs, chicks, adult birds and meat.

13 See Paula Arcari, *Making Sense of 'Food' Animals* (Singapore: Palgrave Macmillan, 2020), 225–227; Alice J. Hovorka, "Women/Chickens vs. Men/Cattle," *Geoforum* 43 (2012): 875–877; Lisa Kemmerer, "Introduction," in *Sister Species*, ed. by Lisa Kemmerer (Urbana: University of Illinois Press, 2011), 9.

14 Kaarlenkaski, "Of Cows and Women."

The effect of the Finnish poultry business on the development of equality among humans is not only a matter of gender, but also a matter of age and class.

Species here is understood in the same way as gender: a category of difference intersecting with other categories of difference. My analysis draws on a common definition utilised in the research traditions of ecofeminism and critical animal studies, especially in discussions that focus on the ethics of care.[15] The guides I examine in this chapter make it clear that not all chickens are equal: sex, health, breed, age, character and egg-laying abilities all had major consequences for the birds – as they still do in the chicken meat and egg industries, as well as among backyard flocks.

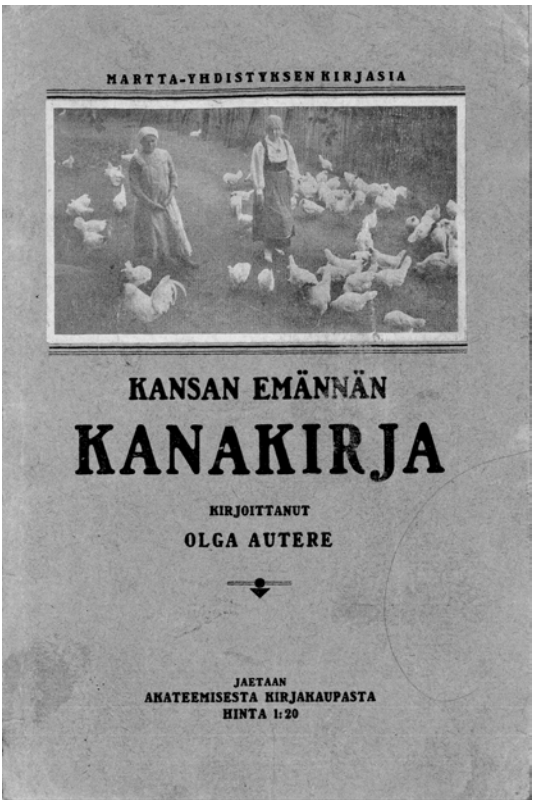

Figure 4.1: Two women with chickens. The cover of *The Farmwife's Hen Book* (1916).

15 Carol J. Adams and Josephine Donovan, eds. *Animals & Women* (Durham: Duke University Press, 1995); Josephine Donovan and Carol J. Adams, eds. *The Feminist Care Tradition in Animal Ethics* (New York: Columbia University Press, 2007); pattrice jones, "Roosters, Hawks and Dawgs: Toward an Inclusive, Embodied Eco/Feminist Psychology," *Feminism & Psychology* 20:3 (2010),

Women and chickens, equally useful

> Well really, man, you are going to start your business in a loony way. Chickens, huh! My wife also wants to have them; whatever can be the reason why those women love chickens, those lousy animals? Wherever there are chickens, there is a house in trouble.[16]

Olga Autere's four-page booklet entitled *The Smallholder Farmer and Chicken Husbandry* is a causerie that utilises a dialogic form, a centuries-old form of pedagogical literature.[17] Story's subtitle is "At Croft Suomela: A Causerie About Chicken Husbandry." The dialogue is between the farmer Suomela[18] and his neighbour. Suomela is building a chicken pen when a neighbour stops by to ask him what he is doing. When the neighbour hears that the Suomelas are about to set up a henhouse, he relates his sceptical views on chicken farming. According to the neighbour, chickens empty granaries as they eat so much, they destroy growing sprouts in fields and the roosters crow all night so that no-one is able to sleep. Moreover, he adds that hens either lay no eggs or hide them – and he remarks that his own wife still keeps harping on about getting her own henhouse, because eggs are too expensive to buy. This leads to an argument about chicken farming between Suomela and his neighbour.

The structure of the story is simple: first the neighbour outlines his argument against chicken farming. Then Suomela gives a longer counterargument that convinces the neighbour. This pattern is repeated multiple times. In the end Suomela has convinced his neighbour – and possibly the reader too – about the economic benefits of chicken farming.

Every guide examined in this chapter is partly dedicated to arguing against the view that chicken farming is uneconomic. In Rautakoski's *Chicken Farming Pays*, this is already evident in the title. Rautakoski writes about how neighbours initially laughed at chicken farming pioneers; then, a few years later, they built their own henhouses.[19] Rautakoski hoped to encourage people to try and develop chicken keeping "also in those places where it is only met with contempt and suspicion."[20]

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doi.org/10.1177/0959353510368120; Kemmerer, "Introduction;" see also Arcari, *Making Sense*, 227–228.

16 Olga Autere, *Pienviljelijä ja kananhoito* (Kerava: Suomen maatalousseurojen keskusliitto, 1923), 3.

17 Penny Brown, "'Girls aloud': Dialogue as a Pedagogical Tool in Eighteenth-Century French Children's Literature," *The Lion and the Unicorn* 33:2 (2009): 202–218.

18 A common surname and house name in Finland. The word has national connotations as it has the same roots as the word *Suomi* ('Finland').

19 Rautakoski, *Kananhoito kannattaa*, 7–8.

20 Rautakoski, *Kananhoito kannattaa*, 47.

As for Autere's other books, *Boys and Girls Keeping Chickens* begins with children's enthusiasm for chicken keeping in contrast to the hesitation of adults, and *The Farmwife's Hen Book* opens with the notion that it has been common to think that chicken husbandry is unprofitable. For its part, *Hen-Kaisa* by Siikaniemi, Relander, Ilkka and Kaila includes a somewhat comical character, Kustaa Töllinpää ('Hut End'), who has not managed to profit from his chicken keeping because of his stubbornness and ignorance about productive methods.

Thus, the neighbour in Autere's *Smallholder Farmer* is not alone in holding suspicions. Mr. Suomela understands him and tells that he and his wife have previously disagreed about chickens. The neighbour replies: "I get that. Those missuses and chickens, they are equally useful."[21] The reply playfully mixes misogyny with attitudes towards chickens and chicken farming. Suomela replies by highlighting the economic benefits of both wives and chickens:

> If our wives get to keep chickens and we build nice, modest homes and runs for the birds, we get to see that the work devoted to it is not for nothing. Our wives cook us tasty and varied food from the eggs. They even sell the eggs for hundreds, even thousands of [Finnish] Marks and thus help us in earning our living.[22]

As the neighbour ridicules both women and chickens, Suomela objectifies both as economically useful. *Smallholder Farmer* shows how the same story can both express instrumentalising attitudes towards women and non-human animals and talk about women as emancipatory subjects who work as agriculture pioneers.

The wives do not figure in Autere's causerie, but they are the original chicken farming agents of the story. They want to have chickens; they want to care for them and use and sell their eggs. Mrs. Suomela persuades her husband to build her a henhouse. At the end of the story, the hesitant neighbour has built a henhouse too, partly inspired by Suomela's defence of chicken farming, and partly by his wife's persistent willingness to acquire chickens.

The character choice of Autere's story enables different reader positions. As the people discussing chicken farming are male smallholder farmers, the causerie especially invites the same type of readers. Yet, as the women in the background of the story are the pioneers in the field of chicken farming, the story gives female readers the possibility to feel nice superiority and invites them to join the community of the innovative female chicken farmers.

Among short poultry keeping guides, Autere's causerie is not alone in its literariness. Another example of the diverse use of literary devices in these guides is *Smallholder Farmers' Chicken Keeping, or a Visit to Hen-Kaisa*. This is a travel ac-

21 Autere, *Pienviljelijä ja kananhoito*, 3.
22 Autere, *Pienviljelijä ja kananhoito*, 4–5.

count with a first-person narrator, who tells us about a group trip to a 'chicken parish' in Southwest Finland. There they visit the female chicken farmer Hen-Kaisa, who has kept hens for nearly twenty years.[23] Kaisa is described as a true authority on chicken farming: she is asked a lot of questions, "but always the experienced poultry woman was able to explain matters."[24]

Kaisa tells the visitors that when she and her husband originally started with a few birds, she initiated it and her husband agreed to it – the order is the same as in Autere's story about the Suomelas and their neighbours. However, in Autere's story the women are in the background, but in *Hen-Kaisa*, Kaisa's husband is a distant figure away from the gathering. There is still a key male character in the story, Kustaa Töllinpää, who has arrived with his wife Sohvi. They have chickens, but they also have some problems: their hens are not laying that many eggs and they have a habit of dozing on the roosts during the day. At Hen-Kaisa's place, the tangle-haired Kustaa learns many reasons for this: for example, chickens should have more windows than they have in Töllinpää. Sohvi reminds Kustaa that she has said this on multiple occasions. However, it was not until their visit to Hen-Kaisa that Kustaa is convinced of the need for improvements.

At the end of the story, two years have gone by since the visit to Hen-Kaisa, and the narrator takes us to Töllinpää. There "Sohvi has got Kustaa to build a henhouse,"[25] and they have about 50 white Leghorn hens (fig. 4.2.) in their pen.[26] The narrator tells us the following:

> We dropped in at the cottage of Töllinpää, and there was quite an argument going on between Sohvi and Kustaa.
>
> "It's so hard to drum some sense into your head, my old man," said Sohvi, "I can't make you understand anything about how we have to have an egg co-operative in this village."[27]

Kustaa initially opposes the idea, because he is, in the narrator's words, "old-fashioned by nature and therefore incapable of instantly comprehending something new and modern, such as co-operation." However, when the co-op is finally

23 Field trips were common among the members of the Finnish Poultry Farming Association. See, for example, Martta Bruun et al., *Pieni kananhoidon opas* (Hämeenlinna: Suomen Siipikarjanhoitajain Liitto, 1929), 8.

24 Siiri Siikaniemi et al., *Pienviljelijän kananhoito eli käynti Kana-Kaisan luona* (Tampere: Pienviljelijäin liitto, 1925), 8.

25 Siikaniemi et al., *Pienviljelijän kananhoito*, 18.

26 On the use of different chicken breeds in egg production, see Catherine Oliver's chapter in this volume.

27 Siikaniemi et al., *Pienviljelijän kananhoito*, 18.

founded, due to Sohvi's insistence, Kustaa even becomes a bit ambitious, as the co-op is his wife's idea. This brings us to the fascinating ending of the story: "Kustaa Töllinpää was unanimously elected to be the manager of the co-op, under the surveillance of the skilled Sohvi, of course."[28]

Why is it that Kustaa and not Sohvi became the manager of the co-op? There had already been some egg co-ops run by women for years at this time, as mentioned in the history of the female egg farmers in Alastaro. Finnish women won the right to vote in 1906, and there had been multiple female Members of Parliament since 1907. Against this background, it is somewhat surprising that it is Kustaa who heads the egg co-op and not his wife, who is depicted having a real passion for egg farming and the co-op. What is more, this decision is not explained in the narrative in any way, as if it was self-evident.

A possible explanation to this has to do with readership. Kustaa has already been described in a comical manner: he is tangle-haired, ignorant and an old-fashioned, slow adopter character, who does not even utter a reply when Sohvi rebukes him. Compared to him, Sohvi and Hen-Kaisa, the central female characters, are quick-witted and well-informed. If Kustaa had been simply left on the sidelines to watch his wife run a co-op, would this have been too little agency for a male character? Considering this, the choice to make Kustaa the manager of the co-op appears as a nod to male readers.

The male domination of society is also visible in Rautakoski's *Chicken Farming Pays*. The book describes many henhouses and chicken keepers. Most of the henhouses are introduced with the name of a man, even if men, wives and sometimes children are involved. Still, Rautakoski recommends that women, in particular, should join egg co-ops and be on their boards, as there is no longer any fear of governors being against it. Rautakoski writes the following: "Besides, it has been noticed that when there are active farmers' wives on board, they have usually advanced the development of the co-op very efficiently."[29] Thus, Rautakoski does not defend gender equality for equality's sake. He defends women because they possess great use value as efficient workers, just like chickens, and are in this respect equal to men.[30]

28 Siikaniemi et al., *Pienviljelijän kananhoito*, 20.

29 Rautakoski, *Kananhoito kannattaa*, 68.

30 I thank the researchers of the Figuring Nature in the North project for bringing this to my attention, especially Marianna Lammi, Elsi Hyttinen and Jouni Teittinen.

Smallholder farming with chickens

> [L]ast year our egg co-op divided almost a million marks among our egg producers. When almost every producer is a smallholder farmer, you can see how significantly chicken keeping effects the private and public economy in both our parish and the whole nation.[31]

Agrarianism was a strong force in Finland. It began in the nineteenth century and especially flourished between the 1920s and 1950s. As the above quote from *Hen-Kaisa* illustrates, smallholder farms were considered to be the backbone of the Finnish economy and society.[32] A small-scale family farm is often defined as large enough for a family to earn a reasonable living as full-time farmers. Still, they often needed sidelines.[33] Egg farming constituted one of these sidelines, albeit a very important one in some districts. Rautakoski stresses the economic importance of the egg trade to the "egg parishes," especially to those which could feed the chickens with local crops.[34]

All the guides studied in this chapter recommend practising egg farming as a sideline, as large henhouses are potentially risky business. Among his descriptions of different henhouses, Rautakoski presents a few farms with several hundred chickens, but reminds the reader repeatedly that he recommends much smaller flocks.[35] Autere, for her part, emphasises in *The Farmwife's Hen Book* that chicken keeping is a sideline, and, as the climate in Finland is not favourable, it should stay so. According to her, big henhouses do not usually make a profit: "In most cases, it's best to keep the flock small enough to be cared for among other chores."[36]

Baking with eggs and using eggs in casseroles became popular at the end of the nineteenth century. This increased the demand for eggs.[37] Still, before the First World War, the egg trade was marginal and the economic significance of egg farming stemmed mostly from farming families using the eggs themselves.[38] *The Farmwife's Hen Book* tells us that egg farming for one's own use always pays,

31 Siikaniemi et al., *Pienviljelijän kananhoito*, 3–4.

32 Niemelä, *Talonpoika* 122; see also Jorma Kalela, "'Yhteiskunnallinen kysymys' ja porvarillinen reformismi," in *Suomalaisen yhteiskunnan poliittinen historia*, ed. by Ville Pernaa and Mari K. Niemi (Helsinki: Edita, 2008), 35.

33 Niemelä, *Talonpoika*, 123.

34 Rautakoski, *Kananhoito kannattaa*, 37–38.

35 Rautakoski, *Kananhoito kannattaa*, 24, 40–41, 43, 47.

36 Olga Autere, *Kansan emännän kanakirja* (Helsinki: Martta-yhdistys, 1916), 8–9.

37 Vihola, "Pärjääkö pienviljelys?," 175–176; Vihola, "Maatalouden rakennemuutokset," 345–346.

38 Vihola, "Maatalouden rakennemuutokset," 404.

because every wife needs eggs in cooking, and with hens, one does not have to buy eggs.[39] Chickens are also described as "the last link in the chain," because they can be mainly supported with nutritional scraps.[40]

The high price of eggs is a particular topic in Autere's *The Smallholder Farmer and Chicken Husbandry*, in which Mr. Suomela rascally says to his neighbour, who is dubious about the profitability of chicken husbandry:

> In the winter, eggs cost even two and a half Marks – at the time of your son's christening – and there were eggs in the cakes and biscuits you offered. And what about the *kinkerit* [a parish catechetical meeting]! There were eggs in both the main dishes and the cakes. [. . .] It is better for us farmers not to buy what we can produce.[41]

Still, farming families usually had a lot to do even without egg farming. Hence, they had to think who had the time to care for chickens. Some of the guides, especially *Boys and Girls Keeping Chickens* and *The Handbook of Chicken* Husbandry, encouraged the active participation of children as chicken farmers, with proper

Figure 4.2: Women and girls feeding white Leghorn chickens in the village of Reitkalli in Hamina, Southern Finland, on July 20, 1924. In the background of the photo there is a wooden fence of the pen. Identifier: KK4372:5805. Finnish Heritage Agency, Collection of Ethnographic Images. CC BY 4.0.

39 Autere, *Kansan emännän kanakirja*, 5–7.
40 Autere, *Kansan emännän kanakirja*, 5–6.
41 Autere, *Pienviljelijä ja kananhoito*, 4.

guidance. These guides also advised that the elderly could care for chickens. Rautakoski writes about an old couple, who had earned their principal living from their henhouse for 16 years: "Of course they don't have enough strength to do whatever, but even old people with their short steps can still walk to their chickens, and their hands can do, what's needed in the henhouse."[42]

Keeping chickens did not require great strength, nor a lot of seed money, maturity, or certain gender. Chickens could survive on smallish grounds and by eating inexpensive food. Increasing the flock was not expensive either, as broody hens did most of the work. For these reasons, chickens were especially important for women, children and the elderly on smallholder farms.

Human-avian love and care in egg farming

> But very rarely have I met real enthusiasm about chickens. Only a few people have it. It is a special affection for those beautiful and lively animals. I've met someone to whom her small chicks are the apple of her eye, who motherly tends them from their first steps and takes part in their joy and sorrow. When mature, the pullets know their caretaker from her voice and walk and show gratitude to their careful keeper in many touching ways. I have met this kind of attachment to chickens in both women and men.[43]

Many of the guides examined in this chapter stress that chicken farmers have to love their birds and care for them kindly. In Jaakko Ilkka and Kaarlo Hänninen's *The Handbook of Chicken Husbandry* there is an entire chapter entitled "A Suitable Caretaker". The first characteristic mentioned herein is "chicken enthusiasm." Similarly, Ilmari Relander writes that usually, after the first year with chickens, the farmers know whether they have enough time, love and enthusiasm for the chickens.[44] He also advises that as it is usually a woman who takes care of chickens, the henhouse should be built near "the building where women live," so that they would "have time to often go to the henhouse and *say kind words* to their chickens. You see, chickens are fond of people, and therefore they need to be socialised with to produce well."[45] The fictional Hen-Kaisa, for her part, ad-

42 Rautakoski, *Kananhoito kannattaa*, 21.

43 Jaakko Kivi and Kaarlo Hänninen, *Kananhoidon käsikirja* (Porvoo: WSOY, 1924), 150.

44 Ilmari Relander, *Kananhoidon alkuopas* (Porvoo: WSOY, 1931), 10.

45 Relander, *Kananhoidon alkuopas*, 24. In some of the gardening guides of the late nineteenth century it was similarly advised to situate the garden so that the farmwife could take care of it among her other household chores. See Taija Kaarlenkaski and Marjukka Piirainen, "Hyötyä ja hyvinvointia kansalle," *Elore* 21 (2014): 8–9.

vises her visitors to care for chickens with "tenderness and love," because "without these characteristics one gets nothing but nuisance from her henhouse."[46]

In summary, a loving and caring attitude towards chickens is an important characteristic of an egg farmer. Yet, what constitutes love and care in these books is not self-evident.

First, love towards chickens is deeply entangled with the egg-laying abilities of the hens. The guidebooks repeat the idea that loving chickens rewards the chicken keeper. Kivi and Hänninen write poetically: "*The personality of the caretaker* and the fervent participation in her darlings' creature comforts form a secret key to a hen's ovary store that opens with gratitude to the caretaker even when the gift of eggs seems to be against the law of nature."[47] Rautakoski also writes about how tender care is a requirement to ensure a great number of eggs.[48] Similarly, Relander concludes his book with the following sentences, which mix loving chickens with nationalism:

> Above all, one has to treat chickens *with love*. Chickens will reward a good caretaker, so we can be sure that if we tend to a chicken house well and rationally, it will be one of the cogs in the *Sampo* that mills love and success to our beloved fatherland.[49]

Writing about love and care in these guidebooks hides the fact that hens do not "give" their eggs to their keeper or reward her with them. All egg farming practises – from breeding and feeding to pasturage and friendly talk – are ultimately aimed at securing a rich supply of eggs. While Rautakoski, for example, stresses that a hen is not an egg machine and that hens cannot be bred to lay maximally because their bodies do not survive it and they will lose their fertility,[50] this animal welfare stand is deeply entangled with the goal of securing as many eggs as possible in the long run.

Second, individualised care forms part of the intensification of animal agriculture. Love towards great layers can mean hate towards those that lay less. Hen-Kaisa tells her visitors how she hates both lazy humans and lazy hens, because they live at the expense of others. Therefore, she uses trap nests to find out who are the "lazy" ones that are deemed not to lay enough eggs so that she can destroy them.[51] Here, both hens and humans are seen instrumentally. Similarly, in *Chicken Farming Pays* Rautakoski cites the chicken farmer Oiva Jääskeläinen,

46 Siikaniemi et al., *Pienviljelijän kananhoito*, 4.
47 Kivi and Hänninen, *Kananhoidon käsikirja*, 151.
48 Rautakoski, *Kananhoito kannattaa*, 11.
49 Relander, *Kananhoidon alkuopas*, 147. *Sampo* is a magical device in Finnish mythology, particularly known from the national epic *Kalevala*, in which Sampo is a mill that gives riches.
50 Rautakoski, *Kananhoito kannattaa*, 34.
51 Siikaniemi et al., *Pienviljelijän kananhoito*, 9.

the owner of a large henhouse of 1200 chickens, who calls those hens who rarely lay eggs "hen-thieves," who have to be weeded out.[52] *The Beginner's Guide to Chicken Husbandry* highlights human-avian love in egg farming, but firmly advises that all sick and weak chicks are destroyed, as they will never become good layers.[53] In the children's book *Boys and Girls Keeping Chickens*, the reader is similarly encouraged to compare the egg-laying of different hens, but the killing of unproductive hens is not mentioned.

Surprisingly few of the guidebooks describe methods of killing chickens in detail or even at all. The scarcity of references to killing practises is partly explained by the fact that the supposed reader is a smallholder farmer and is therefore assumed to already have some knowledge of killing. However, *The Farmwife's Hen Book* depicts how the silence around killing partly stems from the same source that justifies the killing by referring to lazy chickens and the vital growth of productivity – from love that makes the killing uncomfortable. Autere writes:

> The slaughter of chickens is the most unpleasant work in chicken keeping, and it happens every autumn. Most chicken keepers don't want to see it. But a chicken farmer has to make sure that her dear birds get as painless a death as possible. She has to familiarise herself with an animal welfare society in order to be able to follow the progress in this field, too.[54]

Here Autere relates that it is important to learn the most painless killing methods, and thus be familiar with the animal welfare societies. At the time these were the organisations developing and disseminating knowledge about how to kill animals.[55] However, she does not give advice about killing chickens. Instead, she moves straight on to plucking instructions.

As the philosopher María Puig de la Bellacasa has stated, care means different things in different contexts.[56] So does love. Human-animal love and care can challenge human exceptionalism and the institutional exploitation of animals.[57] Yet, in many cases they do not. In the guidebooks studied in this chapter, emphasising love towards chickens and caring for them is bound to the notion of them as killable and edible. As Taija Kaarlenkaski writes, "[e]motional and instrumental attitudes are not mutually exclusive; on the contrary, they constantly coexist

52 Rautakoski, *Kananhoito kannattaa*, 45.

53 Relander, *Kananhoidon alkuopas*, 136.

54 Autere, *Kansan emännän kanakirja*, 61.

55 Nora Schuurman and Karin Dirke, "From Pest to Pet: Liminality, Domestication and Animal Agency in the Killing of Rats and Cats," *Trace* 6 (2020): 9–14.

56 María Puig de la Bellacasa, *Matters of Care* (Minneapolis: University of Minnesota Press, 2017), 1–7.

57 Kathy Rudy, "LGBTQ . . . Z?," *Hypatia* 27 (2012): 605–612.

in animal husbandry."[58] Caring for farmed animals often includes instrumentalisation.[59] There can be human-avian love and care in egg farming, but they are shaped by the instrumental nature of the relationship. As Paula Arcari, a social scientist who has studied the meat discourses of the twenty-first century, writes, "a *rhetoric* of love or care can be layered largely untroublingly over persistent inequities and become another mechanism by which the exercise of power in concealed."[60] According to Arcari, the love directed at "food" animals is "a specific kind of love that is allocated to living others over which an advantaged group assumes dominion [. . .]. It is the kind of love that accepts control, coercion, mistreatment, and even death as part of its remit."[61] In animal husbandry, a farmer's love and care towards animals is entangled with commodification and instrumentalism, or, in other words, seeing the animals as one's own property.[62]

However, it is possible to see this pastoralist love and care in a more positive light. Donna Haraway, for example, defends animal farming because she sees it not as oppression – like Arcari and most other critical animal studies scholars do – but as human-animal labour; a form of commensalism. According to Haraway, even if farming includes killing or otherwise hurting the nonhuman animals, it is mutually rewarding. Still, Haraway strongly emphasises that ethical troubles are unavoidable when killing nonhuman animals. Even when animals are killed they should never be made or perceived as killable.[63]

In feminist ethics of care – a diverse strand of care theory much used in critical animal studies – the conception of care is more straightforward: care in the ethical sense of the word can never include exploitation.[64] However, when we talk about care as work or affections, the relationship between care and oppression is unavoidably more complex. Care is an acceptable word when describing these daily practises of feeding chickens, ensuring their light and warmth, talking to them in a kind manner and treating sick birds. It is also a possible word to

58 Kaarlenkaski, "Of Cows and Women," 23; see also Taija Kaarlenkaski, "Cattle Tending in the 'Good Old Times,'" in *Affect, Space and Animals*, ed. by Jopi Nyman and Nora Schuurman (Oxford: Routledge, 2016); Kaarlenkaski and Piirainen, "Hyötyä ja hyvinvointia kansalle," 14.

59 Jack Slater, "Ambiguous Care: More-Than-Human Care at the Beehive," *Journal of Animal Ethics* 11 (2021).

60 Arcari, *Making Sense*, 229.

61 Arcari, *Making Sense*, 229.

62 Arcari, *Making Sense*, 231–234.

63 Annie Potts and Donna Haraway, "Kiwi Chicken Advocate Talks with Californian Dog Companion," *Feminism & psychology* 20 (2010): 329–331.

64 Josephine Donovan, "The Voice of Animals: A Response to Recent French Care Theory in Animal Ethics," *Journal for Critical Animal Studies* 11 (2013).

describe the sorrow a chicken farmer can feel when slaughtering her chickens. Nevertheless, the care for chickens described in the guidebooks is pastoralist, controlling and violent.

Conclusion

In the first few decades of the twentieth century, human egalitarianism in Finland evolved together with animal farming. The changes in the position of chickens are in many ways connected to the changes in the position of small-scale family farmers, female and male, young and old. Species, class, gender, age and domicile interweaved, as chickens were non-intentional agents of human egalitarianism. The guidebooks studied in this chapter illustrate how egg farming increased the social, economic and political agency of the farmers, especially female farmers.

Still, when the guidebooks discuss egg farming and nationality, neither the chickens nor the farming humans – men and women alike – are seen as beings with intrinsic value. Both are in use: the role of humans in the guidebooks is that of a citizen of a young or formative nation state, and the job of chickens is to improve the living standard of the nation. This is partly due to the genre of the texts: in egg farming guidebooks it would not have been possible to discuss the value of chickens outside of the realm of production. At the time and in the genre, both chickens and humans were described either as hard-working and productive or lazy and unproductive, good or unfit members of the multispecies society. The guidebooks not only advise how to use chickens, but also how to make the most use of the people themselves. Most of the guidebooks promote animal and human welfarism and women's agency, but this is not a genre that discussed abolitionist animal or human liberation perspectives.

The incipient egg industry in Finland both expanded the agency of women and increased the exploitation of chickens. Chickens and female chicken farmers were not allies, although the guidebooks represent them as such. When women gained more agency through the exploitation of the female reproductive system of chickens, the sexism against women declined, but the sexism against chickens increased.[65]

The chicken-keeping guidebooks promoted both animal welfare and more efficient use of chickens. This mixture of care and oppression still characterises ani-

65 See also pattrice jones, "Fighting Cocks: Ecofeminism versus Sexualized Violence," in *Sister Species: Women, Animals, and Social Justice*, ed. by Lisa Kemmerer (Urbana: University of Illinois Press, 2011), 53.

mal farming. Also, the agrarian thought that a family is the best unit of humans to care for farmed animals is still common in the marketing that celebrates "family farms." When it comes to human-chicken relations, the guidebooks do not describe a bygone era of the "good old days" that was totally different than today, but, in a less-extreme form, the same ideas that dominate in chicken husbandry today when chickens are the most common bird both in Finland and globally.[66]

66 Warm thanks to people in the "Culture of Unsustainability" and "Figuring Nature in the North" projects for the conversations that helped to shape this chapter.

Part II: **Increasing efficiency, intensifying problems**

One of the basic principles of the capitalist economic system is the need for constant growth and intensification of production. The second part of this volume examines the intensification of Nordic animal production in the post-World War Two period and its consequences. Intensive production has undoubtedly brought wealth to national economies, productive enterprises and individuals. At the same time, however, it has reduced animals to mere commodities, who are no longer husbanded but rather engineered, or, in the case of wild animals, not caught but harvested.

An excellent example of this is fish and the fish industry, which are less frequently studied in human-animal studies. In his chapter, Tuomas Räsänen discusses how the first intergovernmental attempts to regulate Baltic Sea fisheries in the 1970s failed. This was partly because the primary goal of fishery regulations was not to protect fish stocks but paradoxically to enhance fisheries. In his chapter, Otto Latva examines how maximising fish production has led to industrial fish farming, whereby fish have been produced on an industrial scale to fill consumer tables and to replenish dwindling stocks of wild fish. In both articles by Räsänen and Latva, fish were treated as an inanimate raw material, which was easy to justify because, as Latva points out, until very recently even scientists, let alone the wider public, perceived that "fish cannot have consciousness or feel pain."

However, the capitalist logic of intensification does not just mean the growth of productive units, but has also penetrated bodies of individual animals. The industries have sought to increase production by manipulating animals to become extremely fast-growing breeds and targeting growth to the most productive parts of the body. Nowhere has this capitalisation of the individual animal been more blatant than in broiler production, which Catherine Oliver examines in her chapter. She points out that the very factor that makes broiler production unsustainable for the individual animal – it cannot act in a natural manner due to its oversized muscles – as well as for genetic diversity, since original breeds have all but vanished, has been turned in marketing as its greatest asset. Since the broiler chicken transforms its nutrition at a better ratio to calories, it has been "greenwashed" as being sustainable when compared to, for example, beef or pork.

However, the scale of production and the manipulation of animal bodies have not been enacted without serious problems for humans. When huge numbers of animals are crammed into small spaces, they become prone to diseases. To make sure that no product is wasted, animal industrialists have resorted to the extensive use of antibiotics, and, as examined by Terje Finstad and Eirik Magnus Fuglestad in the context of Norway, this has also taken place in the Nordic countries that pride themselves on producing the cleanest food. To make matters worse, antibiotics are also used as growth promoters in animals. As has so often been the case in environmental and animal history, by addressing one problem,

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the industrial system has spawned another. Today, approximately two-thirds of antibiotics are globally used in farm animals, and notwithstanding the awareness that increasing number of bacteria have developed resistance to drugs, which weakens their efficiency towards countless illnesses that have routinely treated with antibiotics, the use of antibiotics have continued to soar.[1] However, in the current "agro-human orders," as the authors call it, producers have few alternatives if they wish to stay competitive in the market. In so doing they face another dilemma, as the use of antibiotics has damaged the reputation of Norwegian meat among some consumers.

1 Katie Tiseo, Laura Huber, Marius Gilbert, Timothy P. Robinson, and Thomas P. Van Boeckel, "Global Trends in Antimicrobial Use in Food Animals from 2017 to 2030," *Antibiotics* 9 (2020): 918, doi: 10.3390/antibiotics9120918; Sara Reardon, "Antibiotic use in Farming Set to Soar despite Drug-Resistance Fears," *Nature* 614 (2023): 397, doi: https://doi.org/10.1038/d41586-023-00284-x.

Tuomas Räsänen

5 Counting down Baltic fish

Introduction

The seas and oceans of the world are rapidly losing their fish. Currently most of the world's commercially valuable fish stocks are overfished. Despite enormous efforts by fishing nations, fish landings have declined since the late twentieth century almost everywhere, including regional seas such as the Baltic Sea. The fish crisis has generally been blamed on the enormous scale of fishing efforts and improved techniques, such as the introduction of bottom trawlers and long-lines, since the Second World War.[1] In more theoretical histories of fishing it has been demonstrated how fishery science and science-based politics have fostered the collapse of fish stocks. This has often been amplified by catastrophic failures in local management of fishing.[2]

In this chapter I will examine how Baltic Sea states have managed Baltic fisheries in the era of industrial fishing. This study does not aim to offer an all-encompassing explanation of the Baltic fish crisis, nor to account for the entire management regime from local fishery boards to international arenas. These tasks would require an entire book or more. Instead, this chapter focuses on the early era of international cooperation vis-à-vis the regulation of fishing and the protection of fish stocks. This was carried out under the auspices of the Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and the

1 See, for example, Callum Roberts, *The Unnatural History of the Sea* (Washington, DC: Island Press/Shearwater Books, 2007), 185–198; Daniel Pauly et al., "Towards sustainability in world fisheries," *Nature* 418 (2002): 689–695, accessed May 11, 2022, https://doi.org/10.1038/nature01017. 2002; D. Zeller et al., "The Baltic Sea: Estimates of total fisheries removals 1950–2007," *Fisheries Research* 108 (2011): 356–363, accessed May 11, 2022, https://doi.org/10.1016/j.fishres.2010.10.024.2011; Helcom, "History of Catches in the Baltic Sea," accessed May 11, 2022, https://helcom.fi/action-areas/fisheries/commercial-fisheries/history-of-catches-in-the-baltic-sea/.

2 Carmel Finley and Naomi Oreskes, "Maximum Sustained Yield: A Policy Disguised as Science," *ICES Journal of Marine Science*, 70 (2013): 245–250; Stefano B. Longo, Rebecca Clausen, and Brett Clark, *The Tragedy of the Commodity: Oceans, Fisheries, and Aquaculture* (New Brunswick, NJ: Rutgers University Press, 2015); Dean Bevington, *Managed Annihilation: An Unnatural History of the Newfoundland Cod Collapse* (Vancouver: UBS Press, 2010).

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Belts,[3] which until the disintegration of the Soviet Union in 1991 provided the main supranational legal framework for the Baltic Sea states to utilise Baltic fish. The treaty was signed by all the Baltic Sea states in Gdansk, Poland, on 13 September 1973.[4] Hereafter I will refer to this treaty as the Gdansk Convention.

The purpose of the chapter is to analyse the scientific, political and intellectual groundings of the Gdansk Convention. I will argue that the Gdansk Convention was, for several reasons, destined to fail to achieve its main goal of protecting fish stocks and building a sustainable fishing regime for the Baltic Sea. First, it was based on dubious science, which aimed at maximising catches rather than protecting fish. Second, the divided political landscape of the Cold War era prevented efficient cooperation among states. And third, the Gdansk Convention, along with other treaties on fishing, regarded fish as merely an expendable raw material.

This chapter is based on an analysis of archival materials that were drafted and executed at the convention and subsequent cooperation in its early stages. It includes expert opinions by scientists and documents written by government officials. The materials are stored at the archives of The Ministry of Foreign Affairs of Finland. Thus, a Finnish perspective is dominant in these sources. Although the research materials were produced for diplomatic encounters between state actors, this study is not so much concerned with the diplomatic history or foreign policy motives of the Baltic Sea states. Instead, I argue that diplomatic papers can also be approached from the perspective of the history of science and animal history. Hence, I analyse how ideas about fish were articulated when planning and implementing cooperative initiatives and examine what they can tell us about the relationship between humans and fish. Therefore, the somewhat biased nature of the source material does not pose a significant methodological problem. To the best of my knowledge, these materials have never been used in scholarly studies. The Gdansk Convention and some of its aims and achievements, as well as its limitations, have been listed in the literature cataloguing the international agreements in the Baltic Sea area.[5] However, close scrutiny of the planning of the convention and the texts it yielded has not been undertaken.

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3 Despite the fact that the name of the convention suggests a broad focus on all living resources, in reality the convention was almost solely concerned with fish and fishing. This is also why it has not been referred to as an environmental treaty.

4 Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and the Belts, September 13, 1973.

5 Bengt Broms, "Multilateral Agreements in the Baltic Region," in *Comprehensive Security for the Baltic: An Environmental Approach*, ed. by Arthur H. Westing (London: Sage, 1989), 62–63; Arthur H. Westing, "International Baltic Sea Fishery Commission," in *Comprehensive Security for the Baltic: An Environmental Approach*, ed. by Arthur H. Westing (London: Sage, 1989), 72–73.

The Gdansk Convention

The fish crisis is a classic example of the concept of the tragedy of the commons. This theory was first expounded by the biologist Garrett Hardin in 1968.[6] Although Hardin's thesis focused on individuals rushing to benefit from terrestrial commons, his arguments can also be applied to the seas and oceans and how nations act in a similar manner. Apart from narrow coastal strips, the sea has historically been outside the jurisdiction of any state. This has compelled fishing nations to selfishly compete and to exploit the marine commons irrespective of the ecological or social costs. Since the 1950s, international actors have tried to overcome the tragedy of the marine commons by enacting international agreements regarding the sea and its resources.[7] Yet, the results have been meagre, to say the least.

Many of these international agreements were put in place in a rather short period of time during the late 1960s and early 1970s, when the world awakened at a rapid pace to the global environmental crisis: to pollution of the land, air and water and imminent resource scarcity.[8] The marine environment, which had hitherto been all but missing from environmental discourse, appeared as a useful arena in which to start building international cooperation. The changes in the sea affected all littoral states and protecting them did not violate the sovereignty of any nation. Hence, a number of agreements, in Europe and elsewhere, were signed in quick succession to protect the sea.[9] In the context of the Baltic Sea, the first initiatives aimed at protecting it from oil pollution. Soon, however, the focus shifted to all known pollutants, as well as to marine life, the most important of which were fish.[10]

However, the political situation in the Baltic Sea area was far from propitious in terms of seeking to build an environmental regime. The Iron Curtain split the sea into two hostile camps, whereby the Soviet Union, Poland and the GDR, on the one hand, belonged to the communist bloc, which was knitted together by the Warsaw

6 Garrett Hardin, "Tragedy of the Commons," *Science* 162 (1968): 1243–1248.

7 M. J. Peterson, "International Fisheries Management," in *Institutions for the Earth: Sources of Effective International Environmental Protection*, ed. by Peter M. Haas, Robert O. Keohane, and Marc A. Levy (Cambridge, MA: MIT Press, 1993), 252–255, 257–258. See also Finley and Oreskes, "Maximum Sustained Yield," 245.

8 See, for example, John McNeill, *Something New Under the Sun: An Environmental History of the Twentieth-Century World* (London: Penguin, 2001).

9 Douglas M. Johnston, "Marine Pollution Agreements: Successes and Problems," in *International Environmental Diplomacy: The Management and Resolution of Transfrontier Environmental Problems*, ed. by John E. Carroll (Cambridge: Cambridge University Press, 1990).

10 For the early attempts at protecting the Baltic Sea, see Tuomas Räsänen and Simo Laakkonen, "Cold War and the Environment: The Role of Finland in International Environmental Politics in the Baltic Sea Region," *Ambio* 36 (2007): 230–232.

Pact. Whilst the rest of the littoral states, on the other hand, were liberal democracies, of which West Germany and Denmark belonged to NATO. The unresolved status of East Germany made the ratification of all governmental treaties impossible before the end of 1972, when the west finally recognised the GDR as a sovereign state. This Basic Treaty between the two Germanys also opened the door for environmental cooperation. Indeed, the environment provided a safe start for the Baltic Sea states in terms of cooperation across the Iron Curtain, as difficult questions, such as security concerns and human rights, could be set aside.[11] During these years of détente, both sides were trying to ease tensions by tightening contacts in different societal sectors, including the environment. This meant that the Baltic Sea came to be viewed as "a sea of Peaceful Cooperation," as Edward Gierek, the first secretary of the Polish United Workers' Party remarked.[12] This, and the fact that the Soviet Union and its seaborne allies had developed into a fishing superpower in the post-Second World War years, provided the rationale for Poland (orchestrated by the Soviet Union) to promote the fishing agreement. As a lateral benefit of the exchange of knowledge, the Soviet bloc also aspired to gain access to western technology.[13]

The Gdansk Convention was the first governmental agreement in the Baltic Sea area in which all littoral states were signatories. As such, it was an important milestone in the process of détente in international relations that began in the late 1960s. The Gdansk Convention was followed a year later by the Helsinki Convention that aimed to protect the Baltic Sea from environmental pollution. Détente, marked by burgeoning ties between the East and the West, climaxed in 1975 with the Conference on Security and Peace for Europe, held in Helsinki. However, the Gdansk Convention was more than a driver of détente, as it marked the first – ultimately unsuccessful – effort by the Baltic Sea states to secure sustainable fishing and to change human attitudes and relations to fish.

11 Robert G. Darst, *Smokestack Diplomacy: Cooperation and Conflict in East-West Environmental Politics* (Cambridge, MA: The MIT Press, 2001), 57; Räsänen and Laakkonen, "Cold War and the Environment," 230–231.

12 "Poland Initiates Protection of the Baltic," a memorandum by the Polish Government on May 17, 1973, Archives of The Finnish Ministry for Foreign Affairs (henceforth MFA), 38 A, 293/4533–72; Helena Rytövuori, "Structures of Deténte and Ecological Interdependence: Cooperation in the Baltic Sea Area for the Protection of Marine Environment and Living Resources," *Cooperation and Conflict* 15 (1980): 85–86.

13 Simo Laakkonen and Tuomas Räsänen "Cold War Science Diplomacy in the Baltic Sea Region" in *Northern Europe in the Cold War, 1965–1990: East-West Interaction of Trade, Culture and Security*, ed. by Poul Villaume, Ann-Marie Ekengren, and Rasmus Mariager (Helsinki: Aleksanteri Institute, 2016); Roberts, "The Unnatural History of the Sea," 204.

Scientific ideas behind the Gdansk Treaty

In Western culture, humans have seen the sea and the land as forming two different worlds. Human societies have been aware for centuries that hunting can be unsustainable and diminish populations of terrestrial animals in a way that also harms human sustenance. Yet, until the mid-twentieth century even marine scientists thought that marine fish stocks were inexhaustible, no matter how much humans fished. Indeed, scientists argued that more efficient fishing could actually increase fish stocks, as catching larger fish would spur the growth of younger generations of fish.[14] Although the first cracks to this theory had already appeared in the 1930s, fishing efforts and catches continued to increase at an unprecedented pace. Fishing grew during the 1950s and 1960s, for example, at a faster rate than the global population,[15] despite the latter increasing at an unprecedented speed, too.

The primary mission of fishery science was to locate fish stocks, and, ideally, to increase biological production with scientific interventions. Ilmo Hela, the head of the Finnish Institute of Marine Research stated the following about these aims: "The purpose of [fishery science] is eventually to find out how many biological organisms the Baltic Sea produces each year."[16] As for increasing the biological production, Aarno Voipio, a colleague of Hela and his successor as the head of the institute, wrote the following: "Perhaps the greatest indirect advantage that marine science can bring about one day will be knowledge of the best ways to increase basic nutrients in the sea, that is, how we can fertilise the sea. For a farmer does not just fertilise ditches and the edges of fields."[17] The idea of fertilising the sea was never put into practice, as it was soon discovered that humans and their wastewater had already fertilised the sea so much that eutrophication

14 Finley and Oreskes, "Maximum Sustained Yield," 247; Helen M. Rozwadowski, *The Sea Knows No Boundaries: A Century of Marine Science under ICES* (Copenhagen: International Council for the Exploration of the Sea, 2002), 146.

15 Longo, Clausen, and Clark "*The Tragedy of the Commodity*," 4–5.

16 Ilmo Hela, "Itämeren tutkimus," in *Oma maa: Tietokirja Suomen kodeille 11, marraskuu*, ed. by Edvin Linkomies (Porvoo: WSOY, 1962), 291. Translation by the author.

17 Aarno Voipio, "Meri liikkuu," a manuscript of a Radio speech on May 4, 1962, Archives of Finnish Institute of Marine Research, class A, Voipio documents, file 2. Translation by the author. Hela stated the same in more concise words: "In unfavourable sea areas artificial fertilisation would undoubtedly be of great benefit, if one can guarantee that fertilisers stay in one's own fields and invigorate one's own fisheries." Ilmo Hela, "Meritieteen kehitys ja nykyiset tehtävät," *Terra* 73 (1961), 64. Translation by the author.

had become a serious environmental problem.[18] Nonetheless, fishery scientists were confident that the task of knowing more about the sea and its productive capacities was within reach in the near future. As Hela put it: "It is evident that science is now moving into a new era where this goal [predicting fish catches] will be much closer than ever before."[19]

But mastering marine ecology was only halfway towards securing a maximal catch. The rational use of the sea also required bargaining in terms of the number of fish that could be caught. British fishery scientists had already proposed in the 1940s that if the North Sea countries restricted their catches, they would end up fishing more than when they followed a policy of unlimited fishing. This was the scientific basis for the concept of maximum sustained yield (MSY). It postulated that a fishing fleet could continue harvesting fish stocks until scientists were able to pinpoint clear evidence of overfishing, after which restrictions should be put in place.[20]

Signs of overfishing became evident in the 1960s. This led to fishing nations, encouraged by the United Nation's Food and Agricultural Organization (FAO), for example, to regulate their fisheries.[21] In the context of the Baltic Sea, the Gdansk Convention was the first attempt to do just that. By this time there were clear signs of overfishing in the Baltic. Eels were becoming ever rarer; catches of cod had already peaked in late 1950s, while those of herring occurred in the late 1960s. Salmon, the most valued of all fish species, was feared to be next victim of unlimited industrial fishing. In the talks leading up to the conference it was emphasised that the Baltic Sea states must take "co-ordinated steps to prevent further deterioration of the waters and fishery in the Baltic Sea, and by immediate measures in all the countries make possible better economic results of fishing in the future."[22] This meant, on the one hand, resolutions for fishing technologies, such as limits on meshes in fishing nets and the size of fishing hooks and establishing size limits for different fish species. On the other hand, the restrictions also intervened in domestic fishing policies by establishing mutually agreed open and closed seasons, as well as determining the scope of fishing areas in the Baltic Sea. Perhaps most importantly, quotas for each country were implemented.[23]

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18 Tuomas Räsänen, "Alarmism and Denialism in Environmental Science: The Case of the Nutrient Pollution in the Baltic Sea in the 1960s and 1970s," *Scandinavian Journal of History* 43:5 (2018): 646–665.

19 Ilmo Hela, "Utilization of Physical Oceanography in the Service of Marine Fisheries." Article manuscript, n.d., Archives of The Finnish Institute of Marine Research, Hela documents, file 3.

20 Finley and Oreskes "Maximum Sustained Yield," 246–247.

21 Memorandum by Pekka Niskanen on January 27, 1972, MFA, 38 A, 293/4533–72.1972.

22 Memorandum by Georg Åberg and Carl Zander on September 19, 1972, MFA, 38 A, 293/4533–72.

23 Memorandum by Pekka Niskanen on January 27, 1972, MFA, 38 A, 293/4533–72.1972; Draft Convention, Unofficial translation, n.d., MFA, 38 A, 293/4533–72.

The proposals for regulating Baltic Sea fisheries were perfectly in line with the principles of MSY. Nonetheless, these fine intentions also led to problems that initially went unnoticed. The main aim of the proposed treaty was to "conserve living resources" and to "rationalise fishing efforts" according to best possible scientific knowledge.[24] This would guarantee maximum catches for all countries. As the Finnish Committee for Baltic Fisheries stated in its meeting record: our "shared duty [. . .] is to fish in shared sea areas so that fish stocks will be used as well as possible."[25] This overall task would be achieved by determining ideal parameters for each method of fishing, fish species and the areas of fishing, as well as the most conducive times of the year. In their critique of the MSY, Carmel Finley and Naomi Oreskes have pointed out that in order to live up to this promise of sustainable fishing, it would have required the ability for scientists to accurately calculate fish population sizes as well as being able to exactly determine the sustainable levels of removal of fish. Overfished stocks worldwide and in the Baltic Sea, as well as later studies in the Baltic and elsewhere, have invalidated these claims.[26] Worse still, attitudes towards fish amplified the problems.

The hybridity of fish

We are all familiar with images of fishing boats emptying their catch on deck, where thousands of individual fish form a helplessly floundering moving mass, their sides twinkling in the sunlight. In the modern world, factory farmers of cattle, pigs and poultry are able to carefully guard their animals from the critical gaze of the public. Commercial fishers do not need to do this since our perception of fish differs so greatly from that of mammals and birds. The English words 'fish stock' aptly capture the essence of fish in our culture. They are something that can be collected from the endless warehouse that is the sea.

Human ideas about animals changed rapidly in the 1960s and 1970s. Discussions about animals having rights distinct of human benefits intensified in academia as well as among politicians and the general public. Nature conservationists had previously focused on majestic landscapes and wilderness, but they now extended their lens to include wildlife, with the World Wildlife Fund (WWF) func-

24 Memorandum by Veikko Sjöblom on June 6, 1973, MFA, 38 A, 293/4533–72.1973. Translation by the author.

25 Meeting record of the Baltic Sea Fishing Committee on June 5, 1973, MFA, 38 A, 293/4533–72.1973.

26 Finley and Oreskes "Maximum Sustained Yield," 247.

tioning as the main institutional organisation in this regard after its foundation in 1961. However, fish were largely neglected in these discussions, whether it be because they were dealt with in terms of practical conservation or in terms of assessing the value of animals. The concern over wild animals also spread to species in the marine world, but oddly only so far as they belonged to warm-blooded creatures. It is telling that the campaign in the United States to awaken the public to the demise of dolphins asked "would you kill flipper for a tunafish sandwich," comparing two large sized marine animals, whereby one marvellous creature, made famous by the TV show, could be tragically killed by fishermen, while the other was just viewed as being delicious.[27]

It is therefore no wonder that these emerging ideas about animals went unnoticed in the context of the protection of Baltic fish stocks. The Gdansk Convention was based upon the idea, as Veikko Sjöblom, the leading fishery scientist in Finland and the main advisor for the Finnish delegation during the negotiations at the Gdansk Convention, summarised, that "the fish stocks that are not fished are, from the human point of view unproductive," that is, useless. Therefore, he continued, "reasonably organised fishing [should] aim to prevent the natural death of fish as much as possible," since without fishing, the stock "would be wasted." This was the reason why all the fishing should be defined by science, which could assess fish stocks in every little detail: the exact sizes of stocks, their birth and growth rates as well as their mortality.[28] Clearly, a fish was a living being, which was born, matured and eventually died, in an ideal case, only in the hands of fishermen. At the same time, for fishery scientists (and the policymakers they served), fish were nothing but a quantifiable material that was measured in tons, thousands of tons.[29] No-one referred to them as important members of the marine ecological web; they lacked all the individuality that was increasingly attached to terrestrial animals. Needless to say, they were also deemed to lack all qualities that could have made them agential beings. In short, fish were "living raw material;" hybrid beings that were neither agents with intentions and sentience, nor inorganic matter. As such, they resembled agricultural crops more than wild fauna. Thus, they were deprived of any ethical considerations; all that mattered was the income of fishermen, food

27 Cited in Roderick Nash, *The Rights of Nature: A History of Environmental Ethics* (Madison, WI: University of Wisconsin Press, 1989), 173. Also see 172–186; Alexis Schwarzenbach, *Saving the World's Wildlife: WWF – the First 50 Years* (London: Profilebooks, 2011). On the disvaluing of the fish, see the chapter by Matti O. Hannikainen in the present volume.

28 Memorandum by Sjöblom on June 6, 1973; Memorandum by Paul Gustafsson on June 7, 1973, MFA, 38 A, 293/4533–72.

29 See, for example, OECD: 1969 (Finnish report on Fishing), MFA, 38 A, 293/4533–72; Memorandum by Åberg and Zander on September 18, 1972.

for the nation and benefits for the national economy. Paradoxically, therefore, in the planning of the convention that aimed at preventing overfishing, Finnish actors pondered how to best increase fishing.[30]

Race to the bottom

When preparing for the convention, fishery scientists held onto the noble idea that "until an international convention is drawn up and ratified so-called industrial fishing should be prohibited."[31] That never happened, of course, but scientists also hoped that when the convention was signed, it could nevertheless regulate industrial-scale fishing to prevent overfishing. First and foremost, it was deemed essential that the convention should encompass the whole Baltic Sea area. The Baltic Sea is a relatively small waterbody with ragged coastlines and extensive archipelagos. This meant that a large part of the sea belonged to the territorial waters of littoral states. Hence, the Finnish Baltic Sea fishing committee stated: "If fishing restrictions are not imposed on territorial waters, the convention shall not have much significance."[32] Instead, the convention would only cover "the small area in the middle of the sea and a few fish species that are found there."[33] The representatives of Sweden, Denmark and West Germany strongly agreed with this stance, since "fishing mainly takes place precisely within territorial waters."[34]

This was not, however, how the Soviet Union and its allies envisaged any cooperation. In the months leading up to the conference in Gdansk, the Soviet bloc had already expressed a prerequisite that stated that there would be no convention if territorial waters were included. The omission of territorial waters was about much more than the right to continue unregulated fishing. During the Cold War all international cooperation for the Soviet Union and its allies was subordinate to an overarching doctrine of sovereignty, according to which no foreign countries could interfere into the internal affairs of members of the Warsaw Pact. Similarly, the Helsinki Convention of 1974, which aimed at protecting the Baltic Sea from all forms of pollution, excluded territorial waters, which compromised

30 Memorandum by Sjöblom on June 6, 1973.

31 Memorandum by Åberg and Zander on September 18, 1972.

32 Meeting record on June 5, 1973. Translation by the author.

33 Anon., Itämeren kalastussopimus, Kalastusasiantuntijoiden epäviralliset huomautukset Puolan sopimusehdotuksen asiasisällön johdosta, n.d. MFA, 38 A, 293/4533–72. Translation by the author.

34 Memorandum by Henry Söderholm released on June 25, 1973, MFA, 38 A, 293/4533–72. Translation by the author.

the whole agreement.[35] In the end, the national delegations agreed to the formulation suggested by the Polish delegates, in which territorial waters and fishing zones, set by states themselves, were excluded from the convention. However, signatory states pledged to meet the convention protocols through their respective national authorities.[36] In terms of actually protecting fish, this was next to useless, as 12 nautical miles from the coastline (plus even more extensive fishing zones), was excluded from the convention treaty and its resolutions. These were the most productive sea area in terms of fishing,

It is true that the Gdansk Convention achieved some genuine restrictions vis-à-vis the industrialisation of fishing. The resolutions outlawed, for example, vessels over 35 metres, thereby moderating the economy of scale that was rapidly taking place in other seas around the globe. Catches would be controlled by demanding fishing diaries from all fishing boats that exceeded 15 metres in length. Moreover, vessels should not have equipment for "processing fish for industrial purposes." The convention also included limitations on fishing gear and determined fishing seasons, size limits and quotas for different fish species.[37] The precise resolutions, which were ratified, would be set by the Baltic Sea Fishery Commission, which began to operate from a headquarters in Warsaw. All these resolutions would have made sustainable fishing possible only if they would have also covered territorial waters; and only if littoral states would have obeyed the resolutions and the spirit of the convention.

From the start, however, the convention was not only weakened by the omission of territorial waters, but also the fact that the resolutions enacted by the Baltic Sea Fishery Commission were merely recommendations, not legally binding rules. What is more, there were minor entries in the convention treaty text that further weakened the protocol. For example, Poland insisted on a condition that stated that "if at least three signatory countries oppose a recommendation, it ceases to be mandatory for all signatory countries."[38] This gave the communist bloc a veto over every recommendation. As if these exemptions were not enough, it did not take long before the nation states began to further water down the con-

35 Memorandum by Paul Gustafsson on June 18, 1973, MFA, 38 A, 293/4533–72; Räsänen and Laakkonen, "Cold War and the Environment," 234.

36 Anon., notes by Finnish delegates, Sopimus kalastuksesta ja kalakantojen säilyttämisestä Itämerellä, n.d., MFA, 38 A, 293/4533–72; Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and Belts, Gdansk, 1973, accessed June 24, 2022, https://iea.uoregon.edu/MarineMammals/engine/Documents/0-1254–1259.htm.

37 Anon., Gdanskin kokousprotokolla 4.–14., Sopimuksen annex 4: Draft Fishery Rules in the Baltic Sea, notes by the Finnish delegates, n.d. MFA, 38 A, 293/4533–72.

38 Anon., notes by Finnish delegates. See also Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and Belts, Gdansk, 1973.

vention text. For example, the conclusions of the convention were amended by an enactment that gave individual states the right of veto concerning resolutions on quotas and closed areas. Poland immediately rejected the quotas that were set in the previous meeting of the Baltic Sea Fishery Commission.[39] One-by-one all states extended their fishing zones, that is, areas excluded from the convention, on the grounds of protecting the profits of their own fishing fleets, while sometimes complaining, as Poland did, about declining catches in their own fishing zone.[40] By 1980, the whole Baltic Sea was divided to the fishing zones of littoral states,[41] in which the implementation of the convention depended solely on national decision-making. The Baltic Sea Fishery Committee continued its work by giving recommendations to the fishing nations, but it was the sole responsibility of each country to decide whether to actually implement them. Since the 1990s, the Gdansk Convention has been replaced by the European Union as the most influential regime that regulates fisheries. The problems caused by industrial fishing did not stop there, however, and the Baltic Sea states have continuously exceeded their fishing quotas.[42]

Conclusion

The Gdansk Convention was the first international attempt in the Baltic Sea area to mitigate the emerging fish crisis that had been caused by industrial fishing and unsustainable fishing policies. It was built on noble ideas of regulating fisheries through the best scientific knowledge. The problem from the start, however, was that fishery science was founded on the unrealistic premise of being able to calculate exact number of fish and assess entirely the dynamics of fish populations. Retrospectively, it is clear that such an ambitious task was doomed to fail. The construction of fish as hybrid beings and living raw materials that could be extracted from stocks only exacerbated the desire to overfish the sea. Although the

39 Memorandum by Eero Kekomäki on November 7, 1977, MFA, 38 A, 293/4533–72; Letter by Przemyslav Anders to the Finnish Embassy in Warsaw, dated December 20, 1977, MFA, 38 A, 293/4533–72.

40 Letter by Przemyslav Anders to the Finnish Embassy in Warsaw on December 20, 1977, MFA, 38 A, 293/4533–72; Memorandum by Eero Kekomäki on September 4, 1978, MFA, 38 A, 293/4533–72.

41 Note Verbales by West Germany and Denmark to the Polish Ministry of Foreign Affairs on May 21, 1980, MFA, 38 A, 293/4533–72.

42 See, for example, Griffin Carpenter and Christiane Heisse, "Landing the blame: overfishing in the Baltic Sea 2020," *New Economic Foundation*, December 2019, accessed June 24, 2022, https://neweconomics.org/uploads/files/Landing_The_Blame_2020.pdf.

Gdansk Convention declared that its aim was to protect fish stocks, it really only tried to protect the fishing economy. In this exploitative system of industrial fishing, a fish was nothing but a product that was devoid of any ethical, ecological or aesthetic value, not too dissimilar to crop in agriculture or minerals in mining.[43] According to this viewpoint, a fish was a living being, but its only purpose in life was to die precisely at the moment when omnipotent science deemed it timely. This hid the animality of fish and their important role in the marine ecosystem. It also enabled the mentality of overfishing, in which fishing nations rushed to benefit from declining fish stocks as much as they possibly could. Their competing claims regarding the increase in the scale of fishing finally made the whole convention virtually irrelevant.

The story of the Gdansk Convention and Baltic fish is only a tiny fragment in the twisted relationship between humans and fish. But it is also an excellent example of how and why the regulation of fishing has failed time after time everywhere in the world. The construction of fish as a living raw material is the ultimate cause behind the fish crisis, which may well lead to the emptying of commercially important fish species from the world's seas.

43 Also see the chapter by Otto Latva in the present volume.

Terje Finstad and Eirik Magnus Fuglestad

6 Reassembling agro-human orders: Antibiotics in animal agriculture, 1940s–2000s

Introduction

Animal agriculture is tightly coupled with microbial worlds. Microbes turn animal's raw material such as milk into cheese, butter, cream and other products.[1] Yet, animal agriculture is also a fight to keep microbial worlds under control so that animals stay healthy and products are safe for human consumption.[2] Because of the latter, the introduction of antibiotics was a major event in animal agriculture.[3] In the short run, antibiotics allowed for human control of microbial worlds in and around animal bodies, increased animal populations, and intensified production. In the longer term, the use and abuse of antibiotics have built new microbial worlds with resistant bacteria that have forced reorderings of whole sectors of society, including animal agriculture.[4]

In this chapter, we follow controversies in Norway over animal antibiotics from the 1950s to today to investigate how they have affected what we call "agro-human orders." This term is inspired by Sheila Jasanoff's idiom of co-production. The concept of co-production shows how scientific ideas and technological artifacts develop together with the representations, identities, discourses, and institutions that give them meaning and effect. Jasanoff uses the term to show that science and technology never just establish facts about or control over nature, but also constitute social orders in the same process. That is, in scientific and technological practice, natural and social orders are co-produced.[5]

1 Heather Paxson, *The Life of Cheese: Crafting Food and Value* (Berkeley: University of California Press, 2013).

2 Alan L. Olmstead and Paul W. Rhode, *Arresting Contagion: Science, Policy and Conflicts over Animal Disease Control* (Cambridge, MA: Harvard University Press, 2015).

3 Robert Bud, *Penicillin: Triumph and Tragedy* (Oxford: Oxford University Press, 2008); Claire I. R. Chandler, "The Current Accounts of Antimicrobial Resistance: Stabilisation, Individualisation and Antibiotics as Infrastructure," *Palgrave Communications* 5, article 53 (May 2019), https://doi.org/10.1057/s41599-019-0263-4.

4 Hannah Landecker, "Antibiotic Resistance and the Biology of History," *Body and Society* 22, no.4 (March 2015).

5 Sheila Jasanoff, "The Idiom of Co-production," in *States of Knowledge*: *The Co-production of Science and Social Order*, ed. Sheila Jasanoff (London: Routledge, 2004).

https://doi.org/10.1515/9783110787337-009

The concept of agro-human orders highlights that agriculture is not a one-directional practice in which humans cultivate (that is, domesticate) animals.[6] By shaping agricultural practice, certain roles for animals are carved out, and in doing this, human roles in agriculture are changed as well. Introducing the milking robot did not just mean cows were valued in a new way according to how well their udders fit the machine, but also introduced new conceptions of what it meant to be a dairy farmer and to have a well-run farm.[7] That is, new technology tends to go through a phase where the meaning and uses of the technology are in the making together with the identities and roles of its users.[8] With regard to agricultural technologies, the users are more than the human.

In this chapter, the concept of agro-human orders is introduced to shed light on how a new "technology," antibiotics, was ascribed meaning and uses as it entered animal farming, and how this implied creating new roles for the animals and humans as well as new institutions to promote and control the drug. Our approach is shaped by the fields of science and technology studies and rural sociology and also by our empirical materials. The main body of materials comes from the archives of the Veterinary Director in Norway. This archive contains letters from farmers, local veterinarians, various ministries, pharmaceutical companies, dairies, and feed producers and also notes, drafts for regulations, and reports concerning animal antibiotics. Other materials we use include governmental reports, newspaper articles, and pamphlets. As such, we study not how antibiotics affected animals or farmers, but rather ask: What kind of emerging agro-human orders can we read out of these debates concerning antibiotics? That is, how have antibiotics, agriculture, and animals been ordered and reordered over the past 70 years?

Pre-antibiotic animal hygiene

In the decades before antibiotics were introduced to Norwegian agriculture (1920–1940), the sector was going through a phase of technological development and increased productivity. It became organised in cooperatives with market regulation which created stable market conditions. Dairy production was the domi-

6 Heather Anne Swanson, Marianne Elisabeth Lien and Gro B. Ween (eds.), *Domestication Gone Wild: Politics and Practices of Multispecies Relations* (Durham: Duke University Press, 2018).

7 Terje Finstad, Margrethe Aune, and Kine Ariela Egseth, "The Domestication Triangle: How Humans, Animals and Technology Shape Each Other – The Case of Automated Milking Systems," *Journal of Rural Studies* 84 (March 2021): 211–220.

8 Nelly Oudshoorn and Trevor Pinch (eds.), *How Users Matter: The Co-construction of Users and Technology* (Cambridge, MA: MIT Press, 2005).

nant sector, and the number of cows increased by almost 20 percent between 1928 and 1938. Animal husbandry stood for about 70 percent of the value produced from Norwegian agriculture, and much effort was put into research and organisation for better feed, fodder, and breeding during the 1930s. A key factor of improvements in Norwegian animal husbandry in this period was the strengthening of the veterinary service.[9]

One of the animal diseases that emerged in the early twentieth century was mastitis. In a booklet on dairy hygiene from 1935, the medical doctor Peter M. Holst explained that one of the "creature diseases that are of danger to the milk consumer is infection of the udder."[10] As shown by Susan Freidberg, milk has always been a healthy – but also potentially dangerous – food.[11] And as we see from Holst's statement, the quality of milk could be connected to the health of the animal. Thus, mastitis was not only a problem for the farmer who lost production but also a potential problem for consumer health. The problem mastitis represented for the cow was less articulated.

According to veterinarians at the time, bacteria caused mastitis. There were several possible sources of contagion. Human hands were dangerous since they encountered a lot of things. Also problematic were objects that were inserted into the teat. Other sources of contagion were stools, towels, water, and pens.[12] Some veterinarians also claimed that milking transferred bacteria between the cows. At every milking, "bacteria from infected hands, milking machines and cleaning cloths are rubbed onto non-infected udders."[13] In addition, the cattle worker should be on the lookout for things that could ease contagion of the udder, such as damages to the udder, heavy-handed milking, or cows butting, stroking, kicking, or stepping on their udders.[14] Also, the hygienic conditions in the barn could lower the bactericidal abilities of the cow and her udder.

With respect to fighting mastitis, the cattle worker was responsible for milking and caring for the cows and thus the key to keeping cows' udders healthy. The cattle worker was part of a hygienic-scientific system ready to fight mastitis. Veterinarians or their assistants took tests of all the cows in herds where mastitis was suspected. These tests were sent to the so-called Milk Laboratories located in differ-

9 Reidar Almås, *Norwegian Agricultural History* (Oslo: Cappelen Damm, 2004), 90–95.

10 Peter M. Holst et al., *Melken: En håndbok i melkestell* (Oslo: Norske Melkeprodusenters Landsforbund, 1935), 9. All translations from Norwegian by authors.

11 Susanne Freidberg, *Fresh: A Perishable History* (Cambridge, MA: Harvard University Press, 2009).

12 Ottar Bratlie, *Fjøsstell: Hygiene – foring – sjukdommer* (Oslo: J. W. Cappelen, 1944), 240.

13 Bratlie, *Fjøsstell*.

14 Bratlie, *Fjøsstell*.

ent parts of the country. Through this organising, connections between barn and laboratory and between farmer and veterinarian were established. These connections were essential to make the bacteria causing mastitis visible in the first place.

If contagion was found, the cattle worker had to isolate infected animals from the herd. In addition, infected cows should always be milked after the other cows so that the hands of the cattle worker did not transfer contagion.[15] "Everyday hygiene" consisted of doing "everything that promotes the health of the animals."[16] The cattle worker had to be a clean person: udder cloths and other kinds of equipment had to be cleaned properly; she had to make sure her hands were clean; and she should never milk cows in their pens. The cattle worker had to know how to empty the udder completely. Animals that were pregnant should not be milked during the last part of their pregnancy to allow the udders to rest and heal. Medical treatment of mastitis was briefly mentioned, but it did not describe what kinds of drugs were used or their effectiveness.[17]

Increased productivity in animal agriculture went together with the making of a system for handling animal disease. The key to handling mastitis was to follow the advice developed for general hygiene in an earlier era. The measures targeted the conditions of possibility for bacterial infection and consisted of establishing an expert (the veterinarian), disciplining the cattle worker, ordering space into dirty and clean zones, and monitoring the cattle. The war on germs was fought through working upon cows, architecture and human subjects rather than through direct engagement with the bacteria causing infections. It was mostly the human subjects who had to be subjected to control and discipline. This hygiene had an anthropocentric view of how to ensure healthy cows and fresh milk for human consumers.

Introducing antibiotics

The fight against mastitis in dairy cows represented one of the major focal points of the veterinary authorities in the period directly after the 1930s. Against this backdrop, it should come as no surprise that antibiotics became a sought-after type of drug in the mid-1940s. Norway had just emerged out of the Second World War and the country was to be rebuilt for the future. Official policy under the post-war "social democratic order" was to make agriculture work with less and more knowledgeable labour power. This resulted in further progress in yields

15 Bratlie, *Fjøsstell*, 251–252.
16 Bratlie, *Fjøsstell*, 255.
17 Bratlie, *Fjøsstell*, 255–259; Veterinærdirektøren, *Veterinærvesenet 1944* (Oslo, 1946), 19.

and production from agriculture. The milk yield per cow continued to rise with increased use of fertiliser and concentrated feed.[18] The milking cow's position as a "pillar" in Norwegian agriculture was reinforced by the so-called "canalise" policy (*kannaliseringspolitikken*) from the 1950s, which sought to keep grain production in the most fertile and central areas of the country while relegating milk production to more remote areas.[19] Thus, the fight against mastitis remained a central task for veterinarians, and antibiotics became a new method for doing this from the late 1940s onwards.

One of the first signs of this is a letter to the Norwegian Veterinary Director from 1946. It was sent by the district veterinarian S. Nedberg and contained a short newspaper article. The article reported on a Danish researcher who had experimented with penicillin treatment of hundreds of sick cows and "healed 80% of them."[20] Nedberg asked if the director had information about this "new substance" and its use. The director answered that "the most common application is local treatment with an infusion of 25,000 units dissolved in 20–50 cc water in the afflicted teat."[21] At about the same time, district veterinarian F. V. Holmboe wrote to the Medical Directorate asking about the stock of penicillin in Norway and if it could cover the needs of the veterinarians. The Medical Directorate answered that it was working to get ready access to antibiotics.[22]

Norwegian veterinary medicine was not a pioneer in antibiotics among the Nordic countries. Both in Sweden and Denmark, such drugs were already in use when this correspondence between Norwegian veterinarians took place. The Norwegian veterinarians learned that antibiotics were a potential remedy for mastitis by reading about Swedish and Danish experiments with the drug. Norwegian human medicine had already been using antibiotics for a few years. Norwegian troops coming from England to fight the German occupants brought the drug with them in 1944, and it was in common use after 1945. Even if Norway was not a pioneer in either the production or use of veterinary antibiotics, they quickly became part of the fight against mastitis.[23] The letters also show that antibiotics'

18 Almås,*Norwegian Agricultural History*.

19 Reidar Almås, *Omstart. Forslag til ein ny landbrukspolitikk* (Snøfugl: Melhus, 2016).

20 Letter from S. Nedberg to the Veterinary Director, November 28, 1946. Box: Tilsetningsstoffer. Ministry of Agriculture. The National Archives of Norway, Oslo (B:T. M.A.NA).

21 Letter from the Veterinary Director to S. Nedberg, December 10, 1946. B:T. M.A.NA.

22 Letter from F. V. Holmboe to the Medical Director, November 25, 1946. B:T. M.A.NA; letter from Ministry of Social Affairs to the Veterinary Director, November 29, 1946. B:T. M.A.NA.

23 Terje Finstad, "Melk, mastitt og mirakelmedisin. Antibiotikaenes inntog i norsk melkeproduksjon," *Historisk Tidsskrift* 98:3 (November 2019): 215–229.

Figure 6.1: The journal for the Norwegian Veterinary Association contained a lot of articles and advertisements for antibiotics from the 1950s to the 1980s, such as this advertisement for a broad spectrum antibiotic given to cows. Aureomycin was promoted as a "mixture that never fails in the treatment of mastitis." *Medlemsblad for den norske veterinærforening* nr. 5 – mai 1960, 203).

entrance into veterinary medicine was dominated by two questions: How should this medicine be used, and would it become available?

Antibiotics entered Norwegian veterinary medicine and agriculture in the late 1940s, and veterinarians were unsure about the effects of such treatments. Cows were given antibiotics, but it was up to the individual veterinarian to decide how the medicine was distributed and how long cows should be treated. Antibiotics thus entered veterinary medicine before standard practices for its use were established. We can assume that the medicine entered already-established practices, procedures, and institutions in veterinary medicine. This, then, was a process in which use came before knowledge.

Integrating antibiotics

During the 1950s, antibiotics became a common drug in Norwegian dairy farming. The old regime for fighting mastitis was supplemented by this new drug. However, antibiotics also led to changes beyond those that directly had to do with mastitis. In 1950 the Veterinary Director received a letter from Ringerike dairy, in the southeast of Norway, concerning problems during the cheese-making process. The dairy claimed that penicillin used for fighting mastitis had entered the dairy through milk, killing the bacteria used for making cheese.[24] Several dairies reported similar experiences. The national veterinary journal had headlines like "Penicillin and the dairies" and "Penicillin and practise" that discussed the "effects of penicillin in the free market."[25]

The effects antibiotics could have on dairy production caught the attention of veterinarians and dairies in the 1950s. This became an issue even in the national news. In the newspaper *Aftenposten* in 1952, for instance, we can read about a representative from the Norwegian Dairy Producers Association who explained that milk containing penicillin had been delivered to a dairy in Jæren, and another explained that such things probably had happened many other places.[26] The newspaper *Verdens Gang* also published an article with the headline "Illegal addition of antibiotics is not likely to happen in Norway." Here a dairy represen-

24 Personal Message. Penicillinbehandling, March 27, 1950. B:T. M.A.NA.

25 Letter from the county veterinarian to the Veterinary Director, November 25, 1954. B:T. M.A.NA; letter from Norwegian Dairy Producers Association to the Veterinary Director, February 20, 1951. B:T. M.A.NA; Bjørn Kjos-Hanssen, "Penicillin og meieriene," *Medlemsblad for den norske veterinærforening* 2 (1951): 21–26; M. G. Kolberg, "Penicillin og praksis," *Medlemsblad for den norske veterinærforening* 4 (1951): 62–64.

26 Anon., "Det blir neppe tilsatt antibiotika i melken," *Aftenposten,* December 9, 1952, 3.

tative explained that even if antibiotics were not added on purpose, traces of antibiotics might travel with the milk, causing trouble for "cheese bacteria."[27]

According to a director in the Ministry of Agriculture, one concern was that farmers in Denmark had manipulated the quality of milk "by adding penicillin that lowers the number of bacteria in the milk, pushing it up into a higher-quality class than it deserves."[28] The quality test used by the Danish was the so-called reductase test that measured the number of bacteria in milk. This test was also used in Norway as the measure for quality of milk, and since 1940 it had been a precondition for the "quality payment" to farmers.[29] Via the reductase test, milk was divided into "very good milk," "acceptable milk," "poor milk," and "very poor milk." Everything except for "very good milk" caused a reduction in the price paid to the farmer.[30]

With antibiotics, this counting of bacteria became a potential challenge; farmers could be imagined to manipulate the quality of milk. It also shows us that bacteria had a complicated status in dairy production. Manuals concerning dairy hygiene from the 1930s and 1940s portrayed the farmer as a central actor in the fight against bacteria.[31] For the farmer, bacteria were something that caused disease and lowered the price of milk. The reductase test was but one of the signs that dairies and veterinarians judged a farmer's work by the absence of bacteria. In the dairy, the status of bacteria was less one-sided. Bacteria could lower the quality of milk, but they were also necessary to refine milk into cheese, butter, and other products. In this way, bacteria increased the value of milk and its potential uses. Bacteria were therefore valuable for the dairies and their economy.[32]

One early effect of antibiotics was to make visible the differing valuations of bacteria in farms and dairies. And it was these differing valuation practices that caused concern when antibiotics became readily available.[33] Thus, the new drugs did not just become a weapon in the fight against mastitis but brought forward the differences and tensions in dairy production. It was these tensions that were on the table of the Veterinary Director in the form of letters from dairies and veterinarians and in the headlines of newspapers. Thus, in the early phase, antibiotics were

27 Anon., "Ulovlig tilsetning av antibiotica forekommer neppe i Norge," *Verdens Gang*, December 9, 1952, 10.

28 Anon., "Det blir neppe tilsatt."

29 Statistics Norway, *Dairy Production in Norway 1954* (Oslo: Stastics Norway, 1956), 14.

30 Holst et al. *Melken*, 57.

31 Nancy Tomes, *The Gospel of Germs: Men, Women and the Microbe in American Life* (Cambridge, MA: Harvard University Press, 1998); Bruno Latour, *The Pasteurization of France* (Cambridge, MA: Harvard University Press, 1988).

32 Paxson, *Life of Cheese*, 15–47.

33 Claes-Fredrik Helgesson and Fabian Muniesa, "For What It's Worth: An Introduction to Valuation Studies," *Valuation Studies* 1:1 (April 2013): 1–10.

simultaneously a medicine in the fight against infections and a potentially problematic additive to milk, depending on how it was used and what its effects were.

We see several attempts to ensure that antibiotics were not added to milk. For one, a discourse on the important role of bacteria in dairy production was brought forward. Thus, bacteria were no longer simply presented as enemies to be fought. Second, rules were established for who could distribute antibiotics to animals; only veterinarians could now do this. Third, rules were established for how long one had to withhold milk from cattle treated with antibiotics before sending it to dairies.[34] This early debate over the effects of antibiotics shows us that antibiotics could not simply be placed in the existing milk production regime but demanded its reordering. The relations between bacteria and farmers were rearranged, as well as the relations between farmers, dairies, and veterinarians more generally.

From milk to meat

While debates in the 1950s centered around antibiotics as a tool to fight mastitis in dairy cows and the trouble this could bring to dairies and their bacteria, in the 1960s a new issue came on the Veterinary Director's table: the question of antibiotics as feed additive. In 1957, the Ministry of Foreign Affairs sent a letter to the Veterinary Director explaining that an international "antibiotics symposium" had been held in Vienna the year before. A printed report from this symposium about antibiotics in animal feed was produced by the company Lohmann & Co., and the company had requested the Ministry of Foreign Affairs to distribute it to Norwegian specialists on animal feed. The Ministry of Foreign Affairs thus was now contacting the Veterinary Director to ask how many prints of the report the director wanted.[35] Here we see how a company dealing with animal feed and pharmaceuticals tried to open veterinarians' eyes to a broader use of antibiotics in agriculture than that of treating infections.

The question of antibiotics in animal feed was not completely new to Norwegian veterinarians. In 1953, for instance, the Ministry of Agriculture promulgated some regulations on the use of antibiotics in animal feed. It was permitted to sell feed with added antibiotics to swine, poultry, and fur animals. Further, the regulations focused on the levels of antibiotics that could be added and how the control

34 Finstad, "Melk."

35 Letter from Ministry of Foreign Affairs to the Veterinary Director, December 23, 1957. B:T. M.A.NA.

of such things was to be conducted. In 1960, the number of animals that could be given antibiotics-enriched feed grew to also include calves. Antibiotics-enriched feed was not allowed for other animals.[36] Interestingly, the regulation stated that it was "prohibited to advertise that feed with antibiotic additives prevent or cure disease."[37] Antibiotics-enriched feed was now available, but what was it used for if it was not allowed to be promoted as preventing or curing disease?

Arne Frøslie from the National Veterinary Institute in Norway wrote a small note on the topic in the 1980s. He claimed that antibiotics were introduced in Norway in the 1950s and that their use reached its peak in the 1960s. In 1970, the list of antibiotics permitted in feed grew shorter, as those used as therapeutics for humans and animals were forbidden as feed antibiotics. By 1972, only ten percent of feed for swine was antibiotics-enriched. Frøslie claimed that "farmers found no significant benefit from the use of feeds containing antibiotics."[38] He also showed that antibiotics in animal feed were marketed as a growth promoter rather than as a therapeutic drug. They worked mostly by improving the feed conversion in the animal, but Frøslie found that in hygienic conditions, the improvement was only about two to three per cent. If animals were raised under "poor conditions," this number would rise.[39]

Frøslie argued that Norwegian animal agriculture was not really industrialised because of several factors. Climatic conditions, the small size and scattered location of farms, and only a small portion of the country being available to agriculture all limited agricultural efficiency, so Norway could not compete on international markets. He maintained that the main aim of Norwegian agriculture was therefore to cover domestic needs and maintain the rural population. This meant that industrialised livestock farming was avoided and herd sizes regulated. Together with a market model in which prices for agricultural products were set by agreement between the government and the farmers unions, this meant, Frøslie concluded, that livestock production could manage without feed additives.[40]

In this stage of the story, antibiotics became not just a medicine but a potential growth enhancer that could be added to animal feed – in other words, an input factor in agricultural production. However, this did not catch on. One expla-

36 Regulation for antibiotics in animal feed, made by the Ministry of Agriculture, February 19, 1960. B:T. M.A.NA.

37 Note on the regulation of antibiotics, September 23, 1953. B:T. M.A.NA.

38 Arne Frøslie, *The Norwegian Policy of Restricted Use of Feed Additives* (author's translation) (undated). Box: Statens tilsynsinstitusjoner i Landbruket, forvarer. Ministry of Agriculture. The National Archives of Norway, Oslo. B:STL. M.A.NA.

39 Frøslie, *The Norwegian Policy*.

40 Frøslie, *The Norwegian Policy*.

nation was that the raising of animals was not really conducted at an industrial scale. We will see how this became an important argument in later debates concerning antibiotics. Also, antibiotic feed was considered an expensive solution to a problem that was not really seen as an issue by either farmers or veterinarians, or so Frøslie claimed. As we shall see, Frøslie's note might have been written as more than a simple statement of why Norwegian use of antibiotics-enriched feed was low. Something was about to change, as what had been a marginal part of Norwegian animal keeping reached industrial proportions both in scale and production methods during the next decade.

Destabilising antibiotics

If animal agriculture was not seen as industrialised in Norway in the mid-1980s, another industry was on the rise and reaching industrial proportions: salmon farming. Originally thought of as a side production for small farmers along the coast, salmon farming has become a million-dollar global industry with about 1.3 million tonnes of farmed fish produced a year. In the 1980s, the industry experienced explosive growth. From fish farms along the coast, however, reports came about fish suffering from attacks from fungi, parasites, viruses, and, not least, bacteria. In journals connected to the aquaculture industry and veterinary medicine, articles discussed the causes and potential solutions to the problem. Media showed interest, and the public debate turned to the consequences of the preferred solution to this problem: antibiotics. Both lay people, fish farmers, experts, and politicians were concerned about the consequences of the consumption of antibiotics. One estimate was that in 1985 the Norwegian fish farming industry alone used more than the equivalent of 200 million human doses of antibiotics. This was more than the rest of agriculture and human medicine together.[41]

While newspapers were printing articles about disease-ridden salmon farms and the dangers of the rising consumption of antibiotics, Norwegian authorities produced reports. One example is the report *Aquaculture in Norway: Status and Prospects* from 1985. The report stated that the fight against fish disease was

41 Olav Hansson, "Veterinærtjenesten for fisk," *Norsk Veterinærtidsskrift* 4 (1982): 263–264; Einar Kristian Holtet, "Tonnevis av legemidler brukes i fiskeoppdrett," *Aftenposten Morgen*, September 21, 1984, 60; Jagoda Moe, "Stort legemiddelforbruk i fiskeoppdrett. Uante medisinske og miljømessige konsekvenser," *Norsk Farmaceutisk Tidsskrift* 18 (1984): 432–436; Anon., "Sør-Trøndelag Fiskeoppdretterlag: Hitra-sjuken – viktigste sak for medlemmene," *Norsk Fiskeoppdrett* 12 (1983): 19; Anon., "Det forebyggende helsearbeid skal styrkes," *Norsk Fiskeoppdrett* 10 (1984): 9.

Figure 6.2: In the 1980s the salmon farming industry took off. The intensification of fish farming meant that the fish were not always "happy" and travelling first class as the one in this picture on the front page of the journal "Norwegian fish farming." *Norsk fiskeoppdrett*, November 1988.

waged with antibiotics and that this was problematic for several reasons. If medical residues assembled on the bottom of the sea under fish farms, it posed a "risk of resistant strains of bacteria that can cause trouble for effective medical treatment of fish disease."[42] Antibiotic residues could "favor growth of bacteria that are particularly effective at causing disease."[43] Another problem was that people could end up eating fish with medical residues and have allergic reactions, al-

42 *Akvakultur i Norge: Status og Fremtidsutsikter*, Official Norwegian Reports 22 (1985), 17.
43 *Akvakultur i Norge*, 34–35.

though the report stated this was not probably because control over medical residues was strict. Wild fish, however, were not under control, so a scenario where people ate fish with residues could happen.[44]

A working group established by the Directorate of Fisheries repeated these worries in a report concerning the control of medical residues in fish.[45] It stated that there had been a considerable rise in antimicrobial resistance (AMR) in both veterinary and human medicine, so that it was difficult to find "an intestinal flora where one or more bacteria are not resistant to one or more of the antibiotic/chemotherapeutic drugs used. It is probable that one of the causes for this is antibiotics/chemotherapeutics encountered in food."[46] The working group's findings made it into the parliamentary report *On Aquaculture* from 1986/87 that stated that "fish with medical residues must not be brought to market."[47] In media debates, the consumption of antibiotics was problematised along the same lines, despite veterinary authorities and government officials stating that farmed salmon was safe food.

The consumption of antibiotics in salmon farming was first and foremost conceptualised as an issue that concerned human fish eaters. In this context, a new system of control consisting of experts, professionals, and institutions arose together with the massive use of antibiotics in fish farming. A central premise was that it was the human eating the fish who had to be protected from antibiotics. Resistant microbes did not, in this phase, influence the wider health system of Norway but were rather made to be a food safety issue.

This changed. Already in 1985, Tore Midtvedt, a professor in microbial ecology at Karolinska Institute in Sweden, wrote an article in the *Journal for the Norwegian Medical Association*, claiming that "the bacteria strike back." Midtvedt was one of the pioneers dealing with resistant bacteria in the hospital sector in the 1960s.[48] His point of departure in the article was that abuse of antibiotics was the main cause for resistant bacteria in human medicine. Medical doctors had introduced a strict regime for controlling the use of such drugs, but according to Midtvedt, the fish farming industry could also be driving the problem. He criticised the government for focusing only on medical residues in food and claimed that the main problem

44 *Akvakultur i Norge*, 151.

45 Directorate of Fisheries, *Innstilling fra arbeidsgruppen for kontroll av medisinrester i oppdrettsfisk* (Oslo, 1985), 4.

46 Directorate of Fisheries, *Innstilling*, 6.

47 Report to the Storting. *Om havbruk* (1986/1987), 24.

48 Siri Jensen et al. (eds.), "Antibiotikaresistens i Norge – aktørseminar 16.01.2008," *Michael Quarterly* 9 (2012): 13–79; Tore Midtvedt, "Bakteriene slår tilbake," *Tidsskrift for den Norske Lægeforening* 13 (1985): 903.

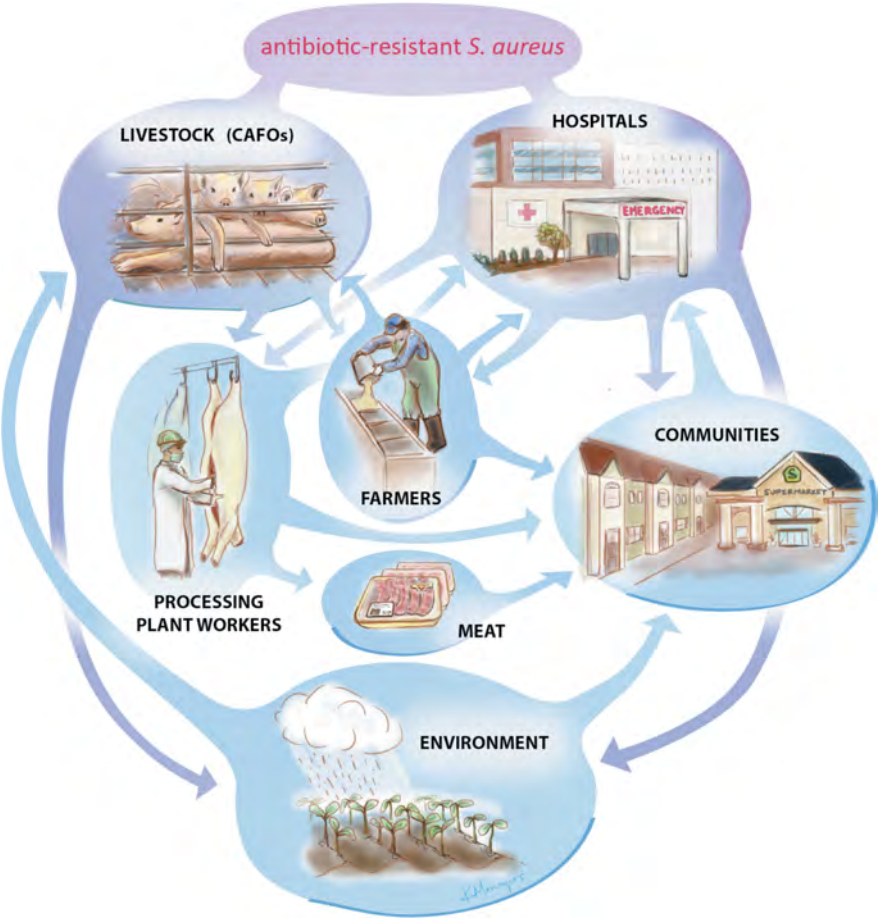

Figure 6.3: Illustration depicting how antibiotic resistant bacteria might travel between food systems and hospitals. This meant a major challenge to established ways of governing food and animal safety and a more intertwined world where animal health became linked to human and environmental health, the so-called "one health program". Smith TC (2015) Livestock-Associated Staphylococcus aureus: The United States Experience. PLoS Pathog 11(2): e1004564. doi:10.1371/journal.ppat.1004564. https://commons.wikimedia.org/wiki/File:TangledwebSaureus.png. CC BY 4.0.

was rather resistant bacteria.[49] In another text from 1988, he claimed that resistant bacteria developed in fish could be transferred to humans and cause disease. This did not even have to happen close to food-producing facilities but "hundreds of

49 Jensen et al., "Antibiotikaresistens," 903.

kilometers away" because bacteria such as campylobacter could spread with bird droppings.[50] Midtvedt reinterpreted the use of antibiotics in fish farming not as a food safety issue but as a human medical issue.

This caused controversy in the veterinary journal, but Midtvedt's ideas seem to have influenced agricultural policy in the 1990s. In 1995, the Ministry of Agriculture received a note from the Veterinary Department that argued: "genes can be exchanged between bacteria that are very different. This is the reason why resistance genes from fish- and animal environments may spread through nature and show up in bacteria that cause disease in humans. Serious infectious disease may then become very hard to treat."[51] A strategy to fight such issues had to be developed by veterinarians, public health institutions, and others.[52] The Ministry of Agriculture established a group the year after that was to map the use of animal antibiotics. This group consisted of people from veterinary science as well as from the field of hospital hygiene.[53] The report from the group stated that a continuous "exchange of bacteria and genetic material took place between animals and humans, partly direct and partly indirect. The collective pressure of antibiotics should therefore be as low as possible both in veterinary and human medicine."[54] For these purposes, "veterinary medicine and human medicine should not be viewed as separate fields."[55]

By the 1990s, then, the use of antibiotics in animals and fish had caused a debate not only about its effects on dairy production and food safety but also about possible connections between animal and human health. Thus, a reordering of two distinct fields dealing with animal health and human health had to take place. The use of animal antibiotics – and more particularly the industrialisation of salmon farming – had effects far beyond the animal and the politics of food. The debate concerning animal antibiotics and human health seems to have entered the Norwegian public through the fish pen rather than the cow sick with mastitis, and this resulted in an inclusion of animals into a new idea of "public health." This had effects on the further use of antibiotics in Norwegian agriculture.

One example is an agreement from 1991 between the Norwegian Pig Breeder Association, Norwegian Meat, Health Services for Pigs, the meat industry's national association (kjøttbransjens landsforbund), the feed manufacturer Norkorn, the co-

50 Jensen et al., "Antibiotikaresistens," 903.
51 Jensen et al., "Antibiotikaresistens," 903.
52 Jensen et al., "Antibiotikaresistens," 903.
53 Jensen et al., "Antibiotikaresistens."
54 Landbruksdepartementets arbeidsgruppe for vurdering av antibiotikabruk, *Vurdering av antibiotikabruk til dyr Innstilling* (Oslo: Landbruksdepartementet, 1997).
55 Landbruksdepartementets arbeidsgruppe for vurdering av antibiotikabruk, *Vurdering*, 7.

operative Norsk Felleskjøp, and Engrosforhandlerkontoret. These were all important actors in the pig and pig feed industries. The agreement read: "The signing parties have agreed to limit the use of zincbacitracin from the 15th of August 1991, no longer adding the substance to feed mixtures given to slaughter pigs. A continued increase in the consumption can harm the reputation of Norwegian pigs' meat."[56]

As stated in the agreement, the reason to limit the use of the antibiotic zincbacitracin in pig feed was fear of a loss of consumer trust in Norwegian meat. This referred to domestic consumers, as pig meat was not (and is not) an important export product of Norway. There had been an increase in the use of zincbacitracin in the feed of Norwegian slaughter pigs from 379 kilos active antibiotic in 1989 to 596 kilos in 1990, and the letter further stated that they "for political reasons had not managed to get a prohibition" against feed enriched with the antibiotic. Even so, the use of zincbacitracin in pig feed fell to 215 kilos active substance in 1994.[57]

By the 1990s, the issue of animal antibiotics had moved certain agricultural organisations because of a fear for their reputation. There is good reason to believe that the controversies around antibiotics and salmon was the cause of this fear. While antibiotics came to be something that could threaten public health beyond the effects of medical residues, public attention on the new, possibly contagious connections between bacteria, animals and humans meant that the reputation of Norwegian animal agriculture was at stake. Something had to be done to reassure the public that industrial agriculture had not entered Norway, that it still was the small-scale venture so often pictured in advertisements and commercials. One way to do that was to represent Norwegian animal agriculture as non-industrial, as Frøslie did, and to distance the country from antibiotics as a feed additive. As such, parts of Norwegian animal agriculture were reordered as non-industrial and principally against (certain) uses of antibiotics, different from "most countries" as the letter put it.[58] Norwegian exceptionalism became an answer to a potential national crisis of reputation.

After the controversies over the use of antibiotics in aquaculture during the 1980s (and due to European concerns over AMR in agriculture), antibiotic use in Norwegian agriculture became part of a wider debate that reshaped Norwegian agro-human orders. In 1995, all the animal producers in Norwegian agriculture agreed upon a self-imposed ban on the use of antibiotics in feed. In 1999, the first government-sanctioned plan for reduced use of antibiotics was released, and the following year the first so-called NORM-VET report was released. NORM-VET became an annual report quantifying and chronicling the use of antibiotics in agri-

56 Svineavlsnytt no. 5 1991. B:T. M.A.NA.

57 Note from the agricultural supervisor, September 21, 1995. B:T. M.A.NA.

58 Svineavlsnytt.

culture in Norway. These steps indicate a new development of the agro-human orders in Norway; from being a technical issue concerning veterinarians, farmers, and food processors, the use of antibiotics in agriculture became a national health issue concerning the health and safety of all inhabitants in the nation through antimicrobial resistance. As late as 2020, the Norwegian government set a cross-sectorial expert group to evaluate future knowledge needs and relevant actions to prevent future AMR risks. This group was appointed jointly by the Health Directorate; the Ministry of Agriculture and Food; the Ministry of Trade, Industry and Fisheries; and the Ministry of Climate and Environment.[59] This underlines the broad field of societal institutions in which agro-human orders have become integrated through microbes and antibiotics.

Conclusion

As with agriculture in most industrialised countries, Norwegian animal agriculture went through a great transformation in the second half of the twentieth century, and the transformation continues. Statisticians speak of the agricultural sector at the start of the 2020s as "unrecognisable" from only 30 years ago, with 60 percent of farms having been abandoned in that period and the remaining ones getting increasingly larger. Looking at a longer period, from when antibiotics entered agriculture until today, shows the change is even greater, with a reduction from more than 200,000 farms in the late 1940s to less than 40,000 today.[60]

Even as agriculture itself marks the lives of only a very small percentage of the population, current agro-human orders, partly created by microbes and the use of antibiotics, now affect more people than ever. Where pre-antibiotic hygiene demanded a clean and tidy farmer, it is now the consumer who must be careful and clean, as the current strategy on AMR states:

> [G]ood hand and kitchen hygiene will protect us from antibiotic-resistant bacteria, and there is also no risk of infection associated with eating the meat if it is sufficiently heat-treated. Nevertheless, the presence of antibiotic-resistant bacteria is undesirable. We also have no guarantee that everyone follows the hygiene advice to the point. Antibiotic-resistant bacteria can also be spread with foods that are not usually heat-treated before they are eaten, such as fresh vegetables used in salads.[61]

59 Governement.no Ministry of Trade, Industry and Fisheries – regjeringen.no, accessed March 9, 2022.

60 Hans Sevatdal, *Eigedomshistorie: Hovudlinjer i norsk eigedomshistorei 1600-talet fram mot nåtida* (Oslo: Universitetsforlaget, 2017).

61 The Ministries, *Nasjonal strategi mot antibiotikaresistens 2015–2020* (2015): 30.

The above quote also demonstrates a trend in which AMR problems stemming from agro-human orders are envisioned as problems to be dealt with by individuals. However, it seems clear that this is a simplification of the issue. Antibiotics have become a key enabling component of high productive agriculture in Norway and across the world, and it is thus part of the features of modernity.[62] This is in line with current Norwegian and international research on AMR that emphasises the international and interconnected nature of AMR, some focusing on a One Health perspective and others employing a more structural perspective.[63]

Whatever we call it, it seems clear that the co-production of science and society through microbes, antibiotics, and animals has created agro-human orders that connect Norwegian agriculture and Norwegian citizens in a global community of common destiny in which AMR has the potential to reshape the foundations of societies. To sum up, we can say that antibiotics and AMR through the past 70 years have made Norwegian agro-human orders increasingly interconnected with a broader spectrum of societal spheres.

62 Laura Kahn, *One Health and the Politics of Antimicrobial Resistance* (Baltimore: Johns Hopkins University Press, 2016); Chandler, "Current Accounts."

63 Scott Podolsky et al., "History Teaches Us that Confronting Antibiotic Resistance Requires Stronger Global Collective Action," *Journal of Law, Medicine & Ethics* 3 (2015): 27–32; Kahn, *One Health*; Amanda Hylland Spjeldnæs, "Resistens roper på revolusjon," *Tidsskrift for den norske legeforeningen* (June 28, 2021), accessed July 11, 2022, doi: 10.4045/tidsskr.21.0070.

Catherine Oliver

7 A conduit for value? More-than-human experiments with chicken metabolism and the Nordic diet

Introduction

Contemporary chickens (and their eggs) are bearers of significant genetic and nutritional knowledge which is stitched together across bodies through the industrialisation of galline metabolisms. The industrialisation of chickens has aligned with global shifts in human nutrition, and chickens have been used to enhance the human diet, particularly in Nordic diets focused on nutritional enhancements, such as increasing Vitamin D_3. The selective breeding of chickens dates to at least the sixteenth century, but it was not until the nineteenth century that a "meatification" of the planet began the industrialisation of chickens in earnest. This led to selection for specific traits and the elimination of undesirable ones, reducing the genetic diversity of chickens. While there has been a global transformation of the chicken to a bigger, faster-growing meat bird, and to produce more and larger eggs, the Nordic case offers a unique insight into how metabolic experiments once used to enhance nutrition are now being put to work for 'sustainable' ends.

In this chapter, coming from a critical animal studies perspective, I first recount the metabolic history of the chicken on a global scale – as this bird is truly the most global of creatures in its reach (living in every country aside from Antarctica); its breeding; and its effects, as a signifier of a transformed biosphere in the Anthropocene Epoch.[1] I then trace the global history of the chicken in the Nordic countries, looking at how the imported broiler came to replace traditional and landrace breeds. I then look specifically at the role of the chicken in the Nordic diet before turning to how metabolic experiments are moving from nutrition to sustainability with the chicken. In the Nordic countries, climate change threatens forest fires and flooding, but will also, according to some experts, offer new

1 Carys E. Bennett, Richard Thomas, Mark Williams, Jan Zalasiewicz, Matt Edgeworth, Holly Miller, Ben Coles, Alison Foster, Emily J. Burton and Upenyu Marume, "The Broiler Chicken as a Signal of a Human Reconfigured Biosphere," *Royal Society Open Science* 5 (2018), doi.org/10.1098/rsos.180325.

https://doi.org/10.1515/9783110787337-010

opportunities for agricultural productivity.[2] In the conclusion to this chapter I argue that this offers a new case study and insight into how these seemingly progressive, animal-friendly countries not only participated in the global exploitation of the chicken but are finding new frontiers under the guise of sustainability.

Throughout the chapter, I draw on agricultural science literature as well as policy documents from the Nordic countries focused on local nutrition changes over the last century. Working with these sources as a critical historical geographer, I look to scientific and policy literatures as archives and "traces left by former lives" and bring them together in a "project of reconstruction."[3] Across these sources, chickens are presented as scientific objects or commodities[4] with little agency. The treatment of chickens as "stock" or "nutrition" across these sources reveals the place of animals as "profit" in scientific discourses, as opposed to agents.[5]

The metabolic history of chicken

Chickens and humans have lived side-by-side in almost every corner of the world for thousands of years. For most of this shared history, chickens were kept in small domestic flocks living in and around humans. The industrialisation of agriculture, sanitisation of cities, and massification of capitalist food production has enclosed the chicken in barns and factories in their billions. The industrialisation of chicken farming divided chickens into "broilers" for meat and "layers" for egg production,[6] with today's broiler and layer birds being the result of a century of fowl-breeding since 1900, when a mutation in the TBC1D1 gene (responsibly for glucose) produced new strains of chickens.[7] Driven increasingly by market logics,

2 Sirkku Juhola, Natacha Klein, Janina Käyhkö and Tina-Simone Schmid Neset, "Climate Change Transformations in Nordic Agriculture?" *Journal of Rural Studies* 51 (2017): 28–36, doi.org/10.1016/j.jrurstud.2017.01.013.

3 Francesca P. L. Moore, "Tales from the Archive: Methodological and Ethical Issues in Historical Geography Research," *Area* 42 (2010): 262–270.

4 Rosemary-Claire Collard and Jessica Dempsey, "Life for Sale? The Politics of Lively Commodities," *Environment and Planning A: Economy and Space* 45:11 (2013): 2682–2699, doi.org/10.1068%2Fa45692.

5 Nik Taylor and Tania D. Signal, "Pet, Pest, Profit: Isolating Differences in Attitudes towards the Treatment of Animals," *Anthrozöos* 22:2 (2009): 129–135, doi.org/10.2752/175303709X434158.

6 Karen Davis, *Prisoned Chickens, Poisoned Eggs. An Inside Look at the Modern Poultry Industry* (s.l.: Book Publishing Company, 2009).

7 Carl-Johan Rubin, Michael C. Zody, Jonas Eriksson, Jennifer R. S. Meadows, Ellen Sherwood, Matthew T. Webster, Lin Jiang et al., "Whole-Genome Resequencing Reveals Loci under Selection during Chicken Domestication," *Nature* 464: 7288 (2010): 587–591.

farmers have been forced to produce and raise profitable birds, using selective breeding and genetic manipulation to increase their productivity whilst driving down costs, the biggest cost of which is feed.

The demands to produce cheap chicken[8] has led to a century of multi-scalar manipulations on chickens. At the genetic scale, selective breeding aims for "robustness."[9] At the environmental scale, light exposure and access to space are manipulated to meet the productivity demands of capitalist temporalities.[10] For example, experiments using light to disrupt poultry metabolisms have been implemented in poultry sectors to elongate the productive hours and annual cycles of chickens. Sunlight, or UV light simulators, stimulates the pituitary gland, signaling to increase the production of follicle-stimulating hormones.[11] And, at the metabolic scale, nutritional management experimentation pursues efficient growth rates. These metabolic experiments are at once rudimentary and sophisticated, relying on particular visions of metabolism housed in the body of the chicken, and written into their eggs.

The nutritional composition of eggs varies; fat-soluble vitamins A, D and E, and water-soluble vitamin B_{12} are all influenced by levels of fat and drugs in chicken diets.[12] As highly digestible foods, eggs and their proteins possess "biological activities of interest for human health" including "antimicrobial, antioxidant, and anti-cancerous properties."[13] This makes the egg a perfect conduit to subtly enhance human diets – particularly as the pre-metabolisation of nutrients by chickens makes these more easily digestible to humans.[14] The chicken uniquely passes this on not only through their flesh, but through their 'byproducts.'

In its contemporary history, chicken business has turned on its head: prior to the mid-twentieth century, chicken meat was usually the byproduct of laying hens whose production had slow down or of fattened cocks unnecessary to producing eggs, but who could not be sexed until six to eight weeks old. Egg production has

8 Jason W. Moore, *Capitalism in the Web of Life* (London: Verso, 2015).

9 J. C. Mckay, N. F. Barton, A. N. M. Koerhuis, and J. McAdam, "The Challenge of Genetic Change in the Broiler Chicken," *BSAP Occasional Publication*, 27 (2018): 1–7, doi:10.1017/S1463981500040486.

10 Davis, *Prisoned Chickens*.

11 L. F. Payne and J. S. Hughes, "The Effect of Inadequate Rations on the Production and Hatchability of Eggs," *Technical Bulletin Kansas Agricultural Experiment Station* 34 (1933), https://www.ksre.k-state.edu/historicpublications/pubs/STB034.pdf.

12 E. C. Naber, "The Effect of Nutrition on the Composition of Eggs," *Poultry Science* 58:3 (1979): 518–528, doi.org/10.3382/ps.0580518.

13 Sophie Réhault-Godbert, Nicolas Guyot, and Yves Nys, "The Golden Egg: Nutritional Value, Bioactivities and Emerging Benefits for Human Health," *Nutrients* 11:3 (2019): 684, doi:10.3390/nu11030684.

14 Ricard Bou, Rafael Codony, Alba Tres, Eric A. Decker and Francesc Guardiola, "Dietary Strategies to Improve Nutritional Value, Oxidative Stability, and Sensory Properties of Poultry Products," *Critical Reviews in Food Science and Nutrition* 49:9 (2009): 800–822, doi.org/10.1080/10408390902911108.

traditionally dominated chicken agriculture worldwide, but by the end of the twentieth century, it was eclipsed by broiler business emerging from the United States.[15] Egg consumption dropped in the latter half of the twentieth century due to salmonella fears, but as a proportion of meat eaten by Americans, chickens rose from 23 percent to 43 percent.[16] This can be traced back to the *Chicken of Tomorrow* contest of 1948 in the United States, co-hosted by the United States Department for Agriculture and A&P stores. The contest ostensibly aimed to find the chicken that could feed a growing population: transforming though genetic selection birds good for laying into "superior meat-type chickens [with] broader-breasts, bigger drumsticks, plumper thighs, and above all, more white meat [. . .] so that the consumer would eventually come to depend on the bird as a reliable kitchen staple."[17] The contest's real goal was to make chicken meat desirable.[18]

This marked the beginning of a revolution in chicken farming, one that led to the exploitation and manipulation creating today's oversized hens, who suffer from multiple osteo-pathologies.[19] Today's chickens owe much of their genetics to these birds. Thus, the contest did not only create new biological conditions for chickens, but also ushered in a new era of metabolic exploitation. However, the differences in broiler and layer chickens dates back much further than this, as discovered by the completion of the physical mapping of the chicken's genome, "the first species mapped that is both a model organism and a global food source."[20] Genome mapping identifies the location of genes, which can enable researchers to identify particular genetic traits and patterns, including identifying when particular traits or changes happened. From the chicken genome map, it was identified that chickens have "evolved genetic adaptations to a new environment, the farm, and subjected to strong human-driven selection leading to remarkable phenotypic changes in morphology, physiology and behaviour."[21]

15 Donald D. Bell and William D. Weaver, *Commercial Chicken Meat and Egg Production* (New York: Springer, 2002).

16 Davis, *Prisoned Chickens*.

17 Alexis Coe, "Today We're Eating the Winners of the 1948 Chicken of Tomorrow Contest," *Modern Farmer* (2014), https://modernfarmer.com/2014/05/today-eating-winners-1948-chicken-tomorrow-contest/, accessed February 25, 2022.

18 David R. Laatsch, "The Chicken of Tomorrow," (no date), https://livestock.extension.wisc.edu/articles/the-chicken-of-tomorrow/, accessed February 25, 2022.

19 Bennett et al., *The Broiler Chicken*.

20 John W. Wallis, Jan Aerts, Martien A. M. Groenen, Richard P. M. A. Crooijmans, Dan Layman, Tina A. Graves, Debra E. Scheer et al., "A Physical Map of the Chicken Genome," *Nature* 432 (2004): 761–764, doi.org/10.1038/nature03030.

21 Rubin et al., *Whole-genome resequencing*, 587.

The process of mapping these genetic markers in chicken DNA revealed that the genomes of broiler and layer birds had split in around 1900, with a mutation in the gene responsible for regulating glucose metabolism. This mutation created "obese" broiler birds.[22] A second mutation – which was created through selective breeding – was found in "the locus for thyroid stimulating hormone receptor (TSHR), which has a pivotal role in metabolic regulation."[23] This second mutation reduced the chickens' reliance on season reproduction, which meant they could lay more regularly and was integral to domestication.[24] The exploitation and manipulation of chicken metabolism therefore has a history dating back perhaps to their earliest domestication in 10,000 years ago, but in industrial terms to the turn of the twentieth century and these genomic mutations.

In *Making Meat*, William Boyd traces "efforts to understand and improve the diets of chickens as a key component to accelerate growth rates and increase metabolic efficiency."[25] Agricultural chemistry and human nutritional science developed alongside one another; chickens were regularly used in studies on essential nutrients, particularly vitamins. This expansion of knowledge regarding chicken nutrition in the early twentieth century United States meant that "by World War II, the nutrient requirements of chickens were known more precisely than any other animal species."[26] These nutritional experiments were with chickens, albeit by force, enlisting chickens to undertake metabolic labour: it relies on chickens consuming, transforming, and producing through their digestive systems at an industrial scale.

Nordic chicken breeds under metabolic threat

This metabolic history began at the turn of the twentieth century in laboratories and farms in the United States, the homeland of agricultural intensification. In the Nordic countries, the monstrous mega-chicken emerging from the United States was a far cry from the traditional breeds. For example, the *Jærhøns* is con-

22 Rubin et al., *Whole-genome resequencing*, 589.

23 Rubin et al., *Whole-genome resequencing*, 587.

24 Anna-Carin Karlsson, Amir Fallahshahroudi, Hanna Johnsen, Jenny Hagenblad, Dominic Wright, Leif Andersson and Per Jensen, "A Domestication Related Mutation in the Thyroid Stimulating Hormone Receptor Gene (TSHR) Modulates Photoperiodic Response and Reproduction in Chickens," *General and Comparative Endocrinology* 228 (March 1, 2016): 69–78, doi: 10.1016/j.ygcen.2016.02.010.

25 William Boyd, "Making Meat: Science, Technology, and American Poultry Production," *Technology and Culture* 42:4 (2001): 631–664, https://www.jstor.org/stable/25147798.

26 Boyd, "Making Meat," 645.

sidered the only "indigenous" chicken breed to Norway, developed and was the principal chicken breed until imports of foreign breeds began in the nineteenth century.[27] Due to their perceived cultural value, *Jærhøns* was selectively bred between 1960 and 1970 by the State Control Breeding Station to strict requirements.[28] Today, *Jærhøns* are considered an at-risk breed.

Icelandic chickens (*landnámshœnan*, settlers' chicken) tell another part of the galline Nordic history. In a profile by *Backyard Poultry,* the Icelandic chicken is described as a "landrace" chicken, one who has "adapted to the natural environment and climate over a long history in the area."[29] Despite their different histories, the fate of the *landnámshœnan* is not dissimilar to that of the *Jærhøns*: their role in commercial production was replaced by imported breeds, and their populations plummeted. Some smaller farms continued to farm the *landnámshœnan*, and conservation scientists collected sample birds at the Agricultural Research Institute, from which over half of today's 2,000 to 3,000 *landnámshœnan* birds originate.[30]

Unlike Norway's and Iceland's singular "*native*" birds, Sweden has 11 different native breeds of chicken[31] originating from different parts of Sweden and, according to geneticists, "have during their history probably been selected for traits that fit their local environment."[32] This study of the different breeds' mitochondrial-DNA sequence showed that all the breeds bar one shared a haplotype (a set of genetic determinants) with other commercial breeds across the world.[33] The differing bird was the *Ölandshöna*, perhaps explained by their origins in the Baltic Sea.[34] The study suggests that it might thus originate from crossbreeding with birds on ships from elsewhere. Across the Swedish breeds, genetic diversity is a growing concern due to high inbreeding of birds lowering genetic diversity, although diversity across

27 FAO, Domestic Animal Diversity Information System (DAD-IS), (no date), https://www.fao.org/dad-is/en.

28 Benedicte Lund, "Status og fremtidsscenarioer for Norsk Genbank for verpehøns," (2010), https://nibio.brage.unit.no/nibio-xmlui/handle/11250/2466665, accessed February 25, 2022.

29 Backyard Poultry, "Breed Profile: Icelandic Chicken," (no date), https://backyardpoultry.iamcountryside.com/chickens-101/icelandic-chicken-breed-profile/, accessed February 15, 2022.

30 Ólafur R. Dýrmundsson, "Settlers' Icelandic Hen Landnámshæna Named a Slow Food Presidium," Slow Food Foundation for Biodiversity, (2020), https://www.fondazioneslowfood.com/en/settlers-icelandic-hen-landnamshaena-named-a-slow-food-presidium/, accessed February 25, 2022.

31 FAO, DAD-IS.

32 Thomas Englund, Lina Strömstedt, and Anna M. Johansson, "Relatedness and Diversity of Nine Swedish Local Chicken Breeds as Indicated by the mtDNA D-loop," *Hereditas*. 151:6 (2015): 229–233, doi.org/10.1111/hrd2.00064.

33 Englund et al., "Relatedness and diversity," 229.

34 Englund et al., "Relatedness and diversity," 201.

breeds is strong.[35] All these local breeds were also faced with extinction when the White Leghorn came to the Nordic shores and there is no conservation programme presently or historically in place.[36]

Finland, similarly, has much more breed diversity in their native chickens with as many as 14 regional stocks of chickens with unique features.[37] Like Icelandic chickens, Finland's native chickens boasts a landrace breed, the Finnish chicken (*suomalainen maatiaiskana*) whose origins can be traced back about a century,[38] and which has ten different stocks that are currently conserved by registered volunteers across Finland.[39] The *suomalainen maatiaiskana* is not currently at risk but by the 1970s, they too had been almost completely replaced in commercial production by hybrid birds, likely originating with the *Chicken of Tomorrow* contest.[40] In the 1960s, conservation action was taken to protect the endangered population of Finnish landrace chickens[41] but this was not via a centralised gene bank but a network of hobby breeders (co-ordinated by the Natural Resources Institute Finland). The population was initially endangered by crossbreeding with "exotic" birds[42] but today over 5,000 landrace chickens are kept by hobby breeders, particularly in a new trend for urban chickens, replicated across other areas of Europe.[43]

The Danish landrace chicken (*Dansk landhøne*) has been kept in Denmark as livestock for 2,000 years. Like the chickens of the other Nordic countries, the *Dansk landhøne* was also threatened with extinction as poultry were imported from elsewhere as agriculture scaled up from the start of the nineteenth century. Like the Icelandic *landnámshœnan,* a group of people – this time farmers – saw the threat of losing the breed and in 1877 to 1878, collected and started breeding the *Dansk landhøne*, seeking to protect the breed. Today, there is a *Specialklubben*

35 Abiye Shenkut Abebe, "Analysis of the Genetic Diversity of Local Swedish Chicken Breeds Using Microsatellite Markers," Master's thesis, *Swedish University of Agricultural Sciences*, 2013, https://stud.epsilon.slu.se/5835/7/abebe_a_s_130703.pdf, accessed May 18, 2022.

36 FAO, DAD-IS.

37 FAO, DAD-IS.

38 M. E. Berres, Juha Kantanen, Mervi Honkatukia, A Wolc and J. E. Fulton,"Heritage Finnish Landrace Chickens Are Genetically Diverse and Geographically Structured," *Acta Agriculturae Scandinavica, Section A – Animal Science*, 69:2 (2020): 81–94, doi.org/10.1080/09064702.2020.1727561.

39 Natural Resources Institute Finland, https://www.luke.fi/en.

40 J. E. Fulton, M. E. Berres, Juha Kantanen and Mervi Honkatukia, "MHC-B Variability within the Finnish Landrace Chicken Conservation Program," *Poultry Science* 96 (2017): 3026–3030, doi:10.3382/ps/pex102.

41 NordGen, *Lantrasdjur*, https://www.nordgen.org/en/native-breed/.

42 NordGen, *Lantrasdjur*.

43 Catherine Oliver, "Returning to 'The good life'? Chickens and Chicken-Keeping during Covid-19 in Britain," *Animal Studies Journal* 10:1 (2021): 114–139.

for Danske Landhøns[44] which sees the old Danish livestock breeds as part of Denmark's cultural heritage. In their heritage protection, the *Dansk landhøne* has become an ornamental bird, a cultural symbol far more so than a 'working' bird.

What connects these Nordic chickens is multiple: their distinctive biological signatures, the threat of extinction that has faced these breeds, and their inability to compete not only with interbred hybrid birds, but with more efficient metabolic worker. Yet this was not the end of specific Nordic signature being written into the cells of chickens – and their eggs. As native breeds died back, a new opportunity for exploitation and experimentation with imported efficiently labouring birds presented itself. In the next section, this entanglement of the highly adaptable and thus eminently exploitable hybrid chicken that flooded the Nordic poultry presented an opportunity to enhance the diets of human populations.

Enhancing the Nordic diet through manipulating chickens

Traditionally, metabolic theory has rested on the assumption that when we eat, chemical conversions of food transform into energy and then the excess leaves the body as waste. This understanding was rooted in and emerged alongside the industrial factory. Thus, industrial lifecycles and human metabolism were entangled: the body, like the factory, would work efficiently by controlling what goes in and monitoring what comes out. Now, the body is understood as a complex system of stores, cycles, and flows. One example of the complexities of the metabolic system can be found in modern malnutrition, which does not only arise due to nutritional deficiency, but also via nutritional *excess*.[45] The contemporary "challenge for nutrition science is to develop new understanding and strategies to enable a balance between promoting, equitably, the health of humans while sustaining the long-term health of the biosphere."[46] Nutritional science today ties into much larger questions over what, and who we eat, and the effects of this on the planet, as well as on human health.

In recent years, the *Nordic Diet* has been gaining popularity in wellness communities in North America. As the *Nordic Diet* spreads across the world, it is being dated back to Viking traditions, made up of foods native and local to Swe-

44 Specialklubben for Danske Landhøns, http://xn–danskelandhns-lnb.dk/.

45 Anthony J. McMichael, "Integrating Nutrition with Ecology: Balancing the Health of Humans and Biosphere," *Public Health Nutrition*, 8:6a (2005): 706–15, doi:10.1079/PHN2005769.

46 McMichael, "Integrating Nutrition," 706.

den, Norway, Iceland, Denmark, and Finland. In an article on United States-based news site NBC[47] nutritionist Luiza Petre described the Nordic diet as having "high amounts of nutrient rich, single foods with vegetables being the corner stone of this diet, and meats only filling the leftover space."[48] This exported *Nordic Diet* focuses on hardy vegetables – like cabbage, leafy greens, tomatoes, root vegetables, and peas[49] – that bulk out the diet alongside fermented fish, and the lack of fruits, aside from the vital sources of local berries such as bilberries, lingonberries, and strawberries.[50] It seems that following this Nordic diet does have some favourable impacts on blood pressure[51] and metabolic improvements.[52]

In the Nordic countries themselves, though, diet has been far more contentious than its exportation suggests. Holm et al. look at changes in the Nordic diet between 1997 and 2012, based on surveys of the adult populations in Denmark, Finland, Norway, and Sweden. They found that the diet was largely stable, but with a rise in health discourses globally also having an effect here, notably being found in increased fruit consumption.[53] However, despite its emphasis on local and native foods, the Nordic diet is far from sustainable: "12 percent of the greenhouse gas emissions and around 90 percent of the nitrogen emissions in Finland, Denmark, Norway and Sweden originate from farming."[54] Going further than just

47 Nicole Spector, "What is the Nordic Diet – and Why Do Doctors, Dietitians and Even Psychiatrists Like It So Much?" *NBC* (2018), https://www.nbcnews.com/better/pop-culture/what-nordic-diet-why-do-doctors-dietitians-even-psychiatrists-it-ncna885531, accessed February 27, 2022.

48 Spector, "What is the Nordic Diet."

49 Maria Lankinen, Matti Uusitupa and Ursula Schwab, "Nordic Diet and Inflammation – A Review of Observational and Intervention Studies," *Nutrients* 11:6 (2019): 1369, doi.org/10.3390/nu11061369.

50 Matti, Uusitupa and Ursula Schwab, "Diet, Inflammation and Prediabetes-Impact of Quality of Diet," *Can. J. Diabetes* 37 (2013): 327–331.

51 L. Brader, Matti Uusitupa, Lars Ove Dragsted, and K. Hermansen, "Effects of an Isocaloric Healthy Nordic Diet on Ambulatory Blood Pressure in Metabolic Syndrome," *European Journal of Clinical Nutrition* 68 (2014): 57–63, https://www.nature.com/articles/ejcn2013192.

52 Andreas Mæchel Fritzen, Anne-Marie Lundsgaard, Andreas Børsting Jordy, Sanne Kellebjerg Poulsen, Steen Stender, Henriette Pilegaard, Arne Astrup et al., "New Nordic Diet – Induced Weight Loss Is Accompanied by Changes in Metabolism and AMOJ Signaling in Adipose Tissue," *The Journal of Clinical Endocrinology & Metabolism* 100:9 (2015): 3509–3519, https://doi.org/10.1210/jc.2015-2079.

53 Lotte Holm, Drude Skov Lauridsen, Jukka Gronow, Nina Kahma, Unni Kjærnes, Thomas Bøker Lund, Johanna Mäkelä and Mari Niva, "The Food We Eat in Nordic Countries – Some Changes between 1997 and 2012," in *Mat är mer än mat: Samhällsvetenskapliga perspektiv på mat och maltider*, ed. by Kerstin Bergström, Inger M. Jonsson, Hillevi Prell, Inga Wernersson and Helena Åberg (Göteborg: Göteborgs universitet, 2015), 227–246.

54 Johan Karlsson, Elin Röös, Tove Sjunnestrand, Kajsa Pira, Malin Larsson, Bente Hessellund Andersen, Jacob Sørensen et al. *Future Nordic Diets: Exploring Ways for Sustainably Feeding the Nordics* (Copenhagen: The Nordic Council of Ministers, 2017), 7, https://norden.diva-portal.org/smash/get/diva2:1163192/FULLTEXT01.pdf, accessed February 25, 2022.

emissions, a 2019 assessment of *Nordic food systems for improved health and sustainability* argued that:

> Nordic diets are contributing to poor health, the food systems are placing pressure on the environment both domestically and abroad, and excessive food waste is leading to environmental and economic losses. Current food systems are not on track to deliver on the Nordic's commitments to Agenda 2030 or the Paris Climate Agreement.[55]

Nordic diets are exceeding planetary boundaries and land use boundaries, making them unsustainable as they are using more resources than can be reproduced. As noted above, food waste and pressure on the environment through farming are critical issues for the Nordic diet, and so too are anthropogenic greenhouse gas emissions. The Nordic diet is also not the healthful diet that they have been perceived as across the world. The same report concluded the following from scientific literature:

> [S]erious health concerns stem from dietary habits in the Nordics. In fact, diet is one of the leading risk factors driving death and disability in the region – in 2017, it ranked second in Sweden and Finland and third in Denmark and Norway.[56]

It is not all bad news for contemporary Nordic diets: they have few nutritional deficiencies following public policy interventions, aside from Vitamin D, iron, and folate.[57] However, echoing concerns of food systems scholars elsewhere, one of the core concerns is the balancing of large-scale healthful nutrition with sustainability and cultural appropriateness.[58] The landscape of diet in the Nordic counties, as laid out here, is complex, facing both specific problems and global pressures in attaining "ecological nutrition."[59] But what has this got to do with chickens, and their eggs?

The Nordic countries have lived with chickens for centuries, with eggs and chicken long featuring modestly in the Nordic diets. When the landrace chickens fell out of favour in the nineteenth and twentieth centuries, being replaced with imported and interbred hybrid birds, eggs and chicken meat began to make up a more substantial part of diets. This is not least as landrace birds were less fre-

55 "Nordic Food Systems for Improved Health and Sustainability," *Stockholm Resilience Centre Report, March 2019,* https://www.stockholmresilience.org/download/18.8620dc61698d96b1904a2/1554132043883/SRC_Report%20Nordic%20Food%20Systems.pdf, 6.

56 "Nordic Food Systems," 22.

57 "Nordic Food Systems," 16.

58 Christophe Béné, Peter Oosterveer, Lea Lamotte, Inge D. Brouwer, Stef de Haan, Steve D. Prager, Elise F. Talsma and Colin K. Khoury, "When Food Systems Meet Sustainability – Current Narratives and Implications for Actions," *World Development* 113 (2019): 116–130.

59 Pamela Mason and Tim Lang, *Sustainable Diets: How Ecological Nutrition Can Transform Consumption and the Food System* (London: Routledge, 2017), doi.org/10.4324/9781315802930.

quent layers and smaller birds than their imported counterparts, leading to some crossbreeding, although each surviving landrace bird today remains genetically distinct.[60] Ultimately, while complicated by heritage and conservationist impulses, the usurping of landrace and heritage breeds for higher producing birds echoed global patterns of metabolic intensification.[61]

Prior to the global industrialisation of poultry farming,[62] chickens would live in small flocks, kept sometimes for eggs, although production of these was low prior to selective breeding, with Bläuer[63] identifying an eighteenth-century source that reasons chickens were peasant timekeepers, announcing the dawn, something lost with the capitalist food system.[64] Chickens were usually domestically under the care of women.[65]

The most substantive studies of chicken farming are in the United States, where small-scale farms have been replaced by large industrial factories that measure their success by how many pounds of flesh they can add to a bird.[66] Looking at the scale of chicken farming in the Nordic countries today reveals just how different chicken farming is from this history: in Sweden, almost 115 million chickens were farmed in 2019,[67] in Norway, this was over 68 million,[68] Denmark 22 million[69] and Finland 79 million chickens were killed[70] as meat production has amped up in the

60 NordGen, "*Finnish Landrace Chicken,*" https://www.nordgen.org/vara-lantrasdjur/finnish-landrace-chicken/, accessed May 24, 2022.

61 Catherine Oliver and Jonathan Turnbull, "A Conduit for Value?" *Cambridge Research into Arts, Social Sciences and Humanities Blog* (2021), https://www.crassh.cam.ac.uk/blog/a-conduit-for-value-more-than-human-experiments-with-chicken-metabolisms/, accessed February 25, 2022.

62 Chris Otter, *Diet for a Large Planet: Industrial Britain, Food Systems, and World Ecology* (Chicago: University of Chicago Press, 2020).

63 Auli Bläuer, *Voita, villaa ja vetoeläimiä. Karjan ja karjanhoidon varhainen historia Suomessa*, (Turku: Arkeologia, Turun Yliopisto, 2015), 147.

64 Catherine Oliver, "Rising with the Rooster: How Urban Chickens are Relaxing the Pace of Life," *The Sociological Review Magazine* (2022), doi.org/10.51428/tsr.hjbn7857.

65 Oscar August Hanke, John L. Skinner and James Harold Florea, *American Poultry History 1823–1973: An Anthology Overview of 150 Years* (Madison, WI: American Printing and Publishing Inc, 1974).

66 Davis, *Prisoned Chickens*.

67 Djurens Rätt, "Sweden: The Chicken Meat Consumption Is Decreasing with More than Two Million Individuals for 2020," https://www.djurensratt.se/blogg/sweden-chicken-meat-consumption-decreasing-more-two-million-individuals-2020.

68 Animalia, *Kjøttets tilstand 2021. Status i norsk kjøtt- og eggproduksjon*, https://www.animalia.no/globalassets/kjottets-tilstand/kt21-web-endelig.pdf, 119.

69 Danmarks statistik, Statistikbanken, 2022, https://www.statistikbanken.dk/HDYR1.

70 Finnish Food Authority, Siipikarjan lihantarkastuslöydökset 2019, (2020), https://www.ruokavirasto.fi/globalassets/yritykset/elintarvikeala/teurastus/teurastamot/lihantarkastustilastot/siipikarjan-lihantarkastusloydokset-2019.pdf.

Figure 7.1: A woman feeding chickens in a pen in Finland. The photo was taken in the twentieth century by journalist Frans Malkus Karrakoski. Uusikaupunki Museum. https://finna.fi/Record/tmk.164786295606200?imgid=1. CC 1.0.

countries' slaughterhouses.[71] But the chicken in the Nordic diet is not just enhancing its calorific content through metabolic exploitation, but literally being used to enhance health and sustainability. For example, the Nordic recommendations for vitamin D_3 have been used in experiments adding nutrients to hens' feeds to boost the prevalence of vitamins in eggs.[72] In the next section, I explore how in the Nordic countries, chickens are put to work as part of enhancing not only human health, but also in creating more "sustainable" diets.

71 K. Törmä, J. Lundén, E. Kaukonen, M. Fredriksson-Ahomaa and R. Laukkanen-Ninios, "Prerequisites of Inspection Conditions for Uniform Post-mortem Inspection in Broiler Chicken Slaughterhouses in Finland," *Food Control* 130 (2021), doi.org/10.1016/j.foodcont.2021.108384.

72 Pirjo H. Mattila, Eija Valkonen and Jarmo Valaja, "Effect of Different Vitamin D Supplementations in Poultry Feed on Vitamin D Content of Eggs and Chicken Meat," *Journal of Agricultural and Food Chemistry* 59:15 (2011): 8298–8303, doi.org/10.1021/jf2012634.

From nutrition to sustainability: Metabolic experiments

The Nordic diet centres on local grains and vegetables and has remained largely stable for a long time. This has given the diet an appeal across the world as healthful in its traditions. However, in the Nordic countries themselves, this diet has not been without its nutritional challenges and nor has industrialisation and exploitation escaped the Nordic countries. The contemporary challenges in the Nordic food system are not simply nutrition based, there are increasing environmental and sustainability concerns. In this section, I look at how this has changed the nature of exploitation of the chicken – being put to work to metabolise a healthier, more sustainable human diet.

The "sustainability – health synergy"[73] of the Nordic diet shows that a more plant-based diet would address current health and sustainability problems related to the high demand for meat, eggs, and dairy. However, the current trajectory for meat-eating is upwards, with chickens increasingly being found on Nordic tables. Chicken – a so-called "white meat" – has long had a reputation for being a healthy, 'lean' alternative. Since 1966, chicken consumption has soared in the Nordic countries: Denmark has seen chicken consumption increase from two kilos per capita to over 14 kilos in 1996, while Finland has gone from zero kilogramme to ten kilos by 2003,[74] and in 2020, this was at 27.5 kilos.[75] This change coincided exactly with the rise of the broiler in Nordic countries.

A similar story can be found across the world; reports such as that of the Environmental Working Group[76] find time and time again that chicken is the "most sustainable" meat. But, this is usually worked out in terms of greenhouse gas emissions exclusively related to birds themselves, rather than connected industries and outputs, therefore ignoring other environmental impacts including deforestation for

73 Meltzer et al., *Environmental Sustainability Perspectives*.

74 Kyrre Rickertsen, Dadi Kristofersson and Solveig Lothe, "Effects of Health Information on Nordic Meat and Fish Demand," *Empirical Economics* 28:2 (2003): 249–273, doi.org/10.1007/s001810200129.

75 Erja Mikkola, "What Was Eaten in Finland in 2020?" Natural Resources Institute Finland, https://www.luke.fi/en/news/what-was-eaten-in-finland-in-2020.

76 Environmental Working Group, *Meat Eater's Guide: Report*, (2021), https://www.ewg.org/meateatersguide/a-meat-eaters-guide-to-climate-change-health-what-you-eat-matters/climate-and-environmental-impacts/, accessed February 25, 2022.

Figure 7.2: A woman is seen grilling broiler chickens using a rotisserie in a shop in Helsinki in 1970. Photo by Kari Hakli. Helsinki City Museum. https://finna.fi/Record/hkm.5E36F6F4-0A2F-4EF5-BEA0-BDF3D6BEDDEE. CC BY 4.0.

soya for poultry diets; air and water pollution; habitat destruction; and species loss.[77] As evidenced in the turnover of chickens in the Nordic countries – and the adoption of imported, fast-growing breeds since the nineteenth century – the desire for productive chickens who can be put to work is not a new idea.

Over the last two centuries, chickens have not only been exploited as food – they have become laboratories, where metabolic processes are controlled, monitored, and manipulated, intensively fine-tuning chicken labour as a synthesiser of nutritional value for humans.[78] Chickens become conduits that transform and improve matter as it passes through them.[79] More-than-human metabolic experiments in the Nordic diet show how the industrial exploitation of animals for capitalist accumulation and human health has congealed in chickens and their eggs is not restricted to the past but is an ongoing experiment for sustainable and healthy human futures. The chickens themselves rarely figure into these considerations.

77 Leah Garces, "Replacing Beef with Chicken Isn't as Good for the Planet as You Think," *Vox* (2019), https://www.vox.com/future-perfect/2019/12/4/20993654/chicken-beef-climate-environment-factory-farms, accessed February 25, 2022.

78 Boyd, *Making Meat*.

79 Oliver and Turbull, *Conduit for Value*.

In the remainder of this section, I look at one example of the health–sustainability nexus that has been playing out in the Nordic countries over the last few decades: the reduced use of antibiotics.[80] Due to antibiotic resistance across the world, some diseases are no longer treatable and "even though the situation in the Nordic countries is considerably better than in large parts of the world, [they] must also contribute to fight this development."[81] Agricultural use of antibiotics has contributed to this crisis, with agricultural antibiotics producing "environmental exposures in a variety of reservoirs, which select for resistant microbes and microbial genes."[82] Poultry farms, where birds live together in close quarters, are particularly risky places for zoonotic risk and thus also for the casual use of antibiotics.[83] In the specific case of the Nordic countries, higher welfare standards (with no conventional cage systems) coupled with a concerted reduction in the use of antibiotics displays a veneer of the health-sustainability nexus, but is all really as it seems?

Caged hens' eggs have been a matter of concern for animal welfare activists and conscientious publics for a long time; since 2012, non-enriched cages have been banned by all European Union member states.[84] Sweden introduced its own legislation a decade earlier in 2002.[85] This is a stark difference to the megafarms of the United States, home to billions of chickens owned primarily by three companies – Aviagen Broiler Breeders, Cobb-Vantress and Hubbard[86] – who have large bases in the United States and in the European Union. These breeding companies have "the attitude that Northern Europe is a comparatively small part of their market share, and they are therefore not willing to put a lot of effort into a breeding programme focussing particularly on free range productivity of laying

80 Martin Wierup, "The Experience of Reducing Antibiotics Used in Animal Production in the Nordic Countries," *International Journal of Antimicrobial Agents*, 18:3 (2001): 287–290.

81 Stig Harthug and Per Espen Akselsen, "Fighting Antibiotic Resistance," *Tidsskrift for den Norske Laegeforenin*. 128:20 (2006): 2343–2346, https://europepmc.org/article/med/19096492.

82 Katherine M. Shea, "Antibiotic Resistance: What Is the Impact of Agricultural Uses of Antibiotics on Children's Health?" *Pediatrics* 112 (Supplement 1) (2003): 253.

83 Randall S. Singer and Charles L. Hofacre, "Potential Impacts of Antibiotic Use in Poultry Production," *Avian Diseases* 50:2 (2006): 161–172.

84 European Commission, "Laying hens," https://ec.europa.eu/food/animals/animal-welfare/animal-welfare-practice/animal-welfare-farm/laying-hens_en.

85 Poul Sørensen, Brigitte Danell, Ulrik Brenøe and Maria Tuiskula-Haavisto, "A Review of Poultry Breeding Stock in the Nordic Countries. Nordisk Genbank Husdyr," *Nordisk Genbank Husdyr* (2004), https://orgprints.org/id/eprint/7196/, accessed February 25, 2022.

86 European Commission, "Executive summary," https://ec.europa.eu/food/system/files/2016-10/aw_practice_farm_broilers_653020_executive-summary_en.pdf.

hens."[87] The relatively high standards for chicken in the Nordic countries are at odds with a global market that aims only to speed and scale up production.

This intensification of chicken production has welfare implications and it also increases the risk of new diseases that could cross species.[88] Microbiologists have hypothesised that "flu viruses circulating among humans first mutate among birds, and that waterfowl, diversified in many species living in the same environment, constitute a perfect 'reservoir' for the emergence of new viruses that can cause pandemics among humans."[89] This is how deadly avian flus spread and coupled with an increased base use of antibiotic resistance in farmed birds, there is a troubling circle of resistance – disease – antibiotic use – resistance (and so on). However, the problem with antibiotics is not simply their use in treating disease: it is their off-label use in promoting growth by enhancing animal production, being added liberally to feed to grow bigger animals since the 1960s.

Antibiotics work to increase animal body mass by reducing immunological stress and thus boost metabolism and growth.[90] However, these compounds cannot be fully metabolised by poultry, and these are "entering into food chains [where they] seriously affect the human immune system, growth, and metabolism of the body."[91] Antibiotics have been found extensively in soil and water,[92] meaning this exploitation of galline metabolisms is not just one of health, but also of the environment. Up until 2006, antibiotic growth promoters (AMGP) were permitted for use in the European Union. In 2006, "concerns about development of antimicrobial resistance and about transference of antibiotic resistance genes from animal to human microbiota"[93] led to the withdrawal of their approval for this use. Within the Nordic countries, there are differences in approaches to AMGPs. When Sweden and Finland joined the European Union in 1995, the former continued with a total ban and the latter had limited use. Meanwhile, in Norway, "a few antimicrobials were used as growth promoters from the 1960s to a limited extent but with the exception of

87 European Commission, "Executive summary," 719.

88 Frederic Keck, "Livestock Revolution and Ghostly Apparitions: South China as a Sentinel Territory for Influenza Pandemics," *Current Anthropology* 60 (2019): 251–259.

89 Keck, *Livestock Revolution*, 252.

90 Of course, this goes only a little way to explain the drastic growth rates of broiler chickens.

91 Juma Muhammad, Sardar Khan, Jian Qiang Su, Abd El-Latif Hesham, Allah Ditta, Javed Nawab, and Abid Ali, "Antibiotics in Poultry Manure and Their Associated Health Issues: A Systematic Review," *Journal of Soils and Sediments* 20:1 (2020): 486.

92 Jia-Qian Jiang, Zhengwei Zhou and V. K. Sharma, "Occurrence, Transportation, Monitoring and Treatment of Emerging Micro-Pollutants in Waste Water – A Review from Global Views," *Microchemical Journal* 110 (2013): 292–300.

93 J. I. R. Castanon, "History of the Use of Antibiotic as Growth Promoters in European Poultry Feeds," *Poultry science* 86 (2007): 2466.

zincbacitracin such use was forbidden in 1969 due to the risk of cross-resistance."[94] Denmark, the most industrialised agricultural sector of the Nordic countries, "the recommendation [is] that antibiotics used in therapy should not be used as promoters, were generally followed" but two kinds of antibiotics were used for growth promotion until 2006.[95]

With the banning of antibiotics for growth promotion, novel new propositions have been made about how else to boost the metabolism of hens and ensure they keep growing bigger. For example, prebiotics have been put to work to improve metabolism by stimulating the immune system of birds by inhibiting pathogenic bacteria.[96] Antibiotic usage in poultry shows how sustainability, welfare, and health discourse are intertwined when it comes to hens. However, the moving market for metabolic exploitation suggests that the end is not yet in sight for novel ways to make the chicken into a conduit for producing and refining different kinds of value. In the conclusion of this chapter, I consider how continued increase in chicken production, and metabolic exploitation, is out of sync with even the most modest and incremental reforms proposed for the future of Nordic diets for health and environment.

Conclusion

There is no doubt that the chicken – and their eggs – have become important sites for nutritional and environmental experiments. However, there are unforeseen side effects of this, not only for humans as discussed in the previous section, but also for chickens. In this concluding section of the chapter, I bring together the Nordic heritage of the chicken with today's industrialised landscape, looking also to the future of the Nordic diet and its reliance on galline metabolism.

Chicken's metabolism has long defined their place in diets across the world. Selective breeding and manipulation saw the genome of chickens mutate in 1900, which was yet further transformed with the 1948 *Chicken of Tomorrow* contest. Part of this mutation allowed chickens to grow faster and larger than ever before, as well as speeding up egg production. In the Nordic countries, landrace breeds had all but been replaced with larger strains of chickens prior even to these mu-

94 Wierup, *Experience of Reducing Antibiotics*, 287.

95 Wierup, *Experience of Reducing Antibiotics*, 287.

96 Daniel Hernandez-Patlan, D. Solis-Cruz, Billy M. Hargis and Guillermo Tellez, "The Use of Probiotics in Poultry Production for the Control of Bacterial Infections and Aflatoxins," *Prebiotics and Probiotics – Potential Benefits in Nutrition and Health* (2020): 217–238, doi.10.5772/intechopen.88817.

tations. Today, these Nordic breeds, with distinctive biological signatures, have seen the threat of extinction from their inability to compete with the efficient metabolic labour of imported breeds.

Further adding to the argument that chickens have become "conduits for value," metabolising feed into human food, is the control of the vast majority of chicken "stock" by just three companies. Over the last two centuries, chickens have not only been exploited as food – they have become laboratories where fine-tuning their labour has reduced genetic diversity, welfare and has seen exploitation at the cellular level. Chickens become conduits that transform and improve matter as it passes through them.[97] Chickens themselves rarely figure in these considerations, save for attempts to protect some landrace breeds for heritage posterity.

In the Nordic countries, animal welfare is protected in law with relatively high standards – although these laws have been critiqued as having many blind spots[98] – across the sector, but this fails to recognise a shift in the sector for increased meat production from fewer, larger farms than in the past.[99] This mainly relies on increased poultry consumption,[100] the species that often lives in the most cramped and exploitative conditions,[101] which is allowed for by laws that rarely go far enough. This is despite evidence that "for both broiler and egg production systems, measures taken to improve bird welfare in poultry production have had no major effect on the efficiency of the system."[102] Even in these high welfare states with animal sentience and prevention of cruelty embedded in law, the increasing exploitation of chickens is addressed usually only in relation to human consequences – as exemplified with the banning of antibiotic growth promoters.

Today, the Nordic countries are looking to the future of the region's diets to not only become healthier, but more sustainable. In part, this relies on more self-sufficiency but projects like that of the *Future Nordic Diets* report[103] also call for a reduction in eating animals. From a traditional utilitarian perspective, perhaps

97 Oliver and Turnbull, *Conduit for Value*.

98 Birgitta Wahlberg, "Re-evaluation of Animal Protection by the Finnish Animal Rights Lawyers Society," *Society Register* 3:3 (2020): 123–142, doi.10.14746/sr.2019.3.3.07.

99 B. A. Åby, Juha Kantanen, L. Aass, and T. Meuwissen, "Current Status of Livestock Production in the Nordic Countries and Future Challenges with a Changing Climate and Human Population Growth." *Acta Agricturae Scandinavica, Section A – Animal Science* 64:2 (2014): 73–97, doi.org/10.1080/09064702.2014.950321.

100 Åby et al., "Current Status."

101 Davis, *Prisoned Chickens*.

102 Ilkka Leinonen and Ilias Kyriazakis, "How Can We Improve the Environmental Sustainability of Poultry Production?," *Proceedings of the Nutrition Society*, 75:3 (2016): 265–273, doi:10.1017/S0029665116000094 272.

103 Karlsson et al., *Future Nordic Diets*.

this call for fewer animals to be eaten overall suffices to address animal exploitation. However, it is notable that in this report animal welfare is mentioned only once:

> [A] successful way to market a diet with less animal products could be to highlight, not only the environmental and climatic benefits it would bring, but also the health benefits – both towards the public and towards decision-makers, who are facing increasing costs in the health system due to welfare diseases[104]

In the Nordic countries – renowned for their emphasis on welfare – the welfare of humans is seen as separate from the welfare of animals in looking to futures that can be more sustainable for humans and for animals. The chicken serves as a symbol of continued and adapting exploitation of animals under the guise of sustainability. Animal exploitation has intensified in industrial agriculture and beyond in the past 150 years, and the Nordic countries have their own specific relationships with chickens that have also transformed. Thinking metabolically about chickens as conduits for value – and how they have been put to work for specific aims – offers insight into how these seemingly progressive, animal-friendly countries not only participated in the global exploitation of the chicken but are finding new frontiers of exploitation under the guise of sustainability and health. The place of animals, therefore, remains one of profit, albeit under a focus on welfare.

104 Karlsson et al., *Future Nordic Diets*, 58.

Otto Latva

8 Coming to terms with fish farming and fish consciousness

Introduction

This chapter explores how fish sentience, consciousness, and agency have been understood in Finnish public discussion in the context of fish farming. Understanding that fish are conscious beings, who feel pain, has long been part of our everyday culture. Various sources from different decades express how fish have been seen as lively and intelligent beings and how the suffering of a fish has evoked anxiety and empathy in humans.[1] In Finland, for instance, animal welfare societies organised events for fishmongers at the beginning of the twentieth century to teach the ethical treatment of fish.[2]

Throughout the twentieth century, the general perception among scientists has been that fish cannot have consciousness or feel pain.[3] However, this kind of understanding has been slowly changing and fish consciousness has been studied more comprehensively in the twenty-first century. Several studies have appeared in the past two decades that point out that fish are much more intelligent than had hitherto been thought, possessing capabilities to memorise, learn, use tools, cooperate, and feel pain.[4] Altogether, our cultural perceptions concerning fish have been and are still very contradictory. One example of this is the use of fish

1 See, for example, Anon., "Kalansaalis," *Tornion Uutiset*, May 16, 1907, 2; Juhani Aho, "Kuinka särkiä ongitaan," *Metsästys ja kalastus* 11 (1921); Väinö-setä, "Ongella," *Viikko-Sanomat*, July 30, 1932, 3; "Metelöiviä kaloja," *Länsi-Savo*, March 21, 1950, 3; Anon., "Tiesittekö tämän kaloista," *Uusi Suomi Viikkolehti*, November 19, 1950, 1; "Kansainvälinen yhteistyö lohentutkimus alalla," *Länsi-Savo*, August 7, 1971, 8; Anon., "Pilkkimisestä," *Etelä-Suomen Sanomat*, April 13, 1982, 19; Suomen eläinsuojeluyhdistys, "Vapaa-ajan kalastajan huoneentaulu," *Hangötiden*, June 20, 2003, 15.

2 Timo Mäkinen, "Kalankasvatus ja kalojen suojelu," *Alue ja Ympäristö* 41 (2012): 102.

3 See, for example, George M. Johnson, "Do Fish Feel Pain?," *Boys' Life* 3 (1913): 23; F. Barbara Orlans, *In the Name of Science* (Oxford: Oxford University Press, 1993), 147; Brian Key, "Fish Do not Feel Pain and Its Implications for Understanding Phenomenal Consciousness," *Biology & Philosophy* 30 (2015): 149–165, accessed May 10, 2022, doi:10.1007/s10539-014-9469-4.

4 See, for example Rebecca Dunlop and Peter Laming, "Mechanoreceptive and Nociceptive Responses in the Central Nervous System of Goldfish (Carassius Auratus) and Trout (Oncorhynchus Mykiss)," *The Journal of Pain* 6 (2005), accessed May 10, 2022, doi:10.1016/j.jpain.2005.02.010; Victoria Braithwaite, *Do Fish Feel Pain?* (Oxford: Oxford University Press, 2010).

Note: This study was funded by the Academy of Finland (project nos. 323756 and 341118).

https://doi.org/10.1515/9783110787337-011

as nourishment. It is quite clear that many people consider fish to be non-human animals just like mammals, birds, and reptiles. However, some people refuse to eat animal products, but still make an exception concerning fish. According to discussion in different media, people choose this kind of diet, known as pescetarianism, for ethical reasons, as they think that fish do not feel pain and fear to the same extent as mammals.[5] Even the famous American rock band Nirvana sang that "It's ok to eat fish cause they don't have any feelings" on *Something in the Way* on their seminal album *Nevermind* in 1991.[6] As these examples show, it can be interpreted that fish are a borderline case in our culture – they can be defined as living and vibrant creatures or lifeless and inanimate things depending on the context.

I will focus in this chapter on an examination of how fish agency, sentience, and consciousness have been understood in Finnish public discussion concerning fish farming. When I talk about "agency" in the chapter, I mean the way in which animals have influenced history and contributed to making the world the place it is today. I use a broad definition of agency, including such vital functions as defecation. I aim to investigate how the perceptions of fish agency, intelligence and sentience, occasionally noticeable in our everyday culture, have been discussed in the context of Finnish fish farming from the beginning of the fish farming practices in the late nineteenth century up to 2018.[7]

The history of fish farming in Finland includes various changes. From the late nineteenth century to the 1960s, fish was mainly farmed to supply fish stocks in natural environments. The first fish hatcheries were established along the renowned salmon rivers during the latter part of the nineteenth century. There were only a few hatcheries in existence until the 1920s and 1930s. During this time, the permit conditions for log-driving and the building of dams began to include a clause for the establishment of fish hatcheries to compensate for damage caused by these industries. This act significantly increased the number of fish hatcheries in Finland. Another similar kind of act was the Fishing Act of 1951, in

5 See, for example, Lloyd Ellman. "Vegetarians Who Eat Fish Are Actually onto Something," *Vice*, April 26, 2014, accessed April 29, 2022, https://www.vice.com/en/article/3djvq9/vegetarians-who-eat-fish-are-actually-onto-something; Annabel Mulliner, "Are Pescatarians just Lazy Vegetarians?," *Wild Magazine*, April 7, 2019, accessed April 29, 2022, https://wildmag.co.uk/2019/04/07/are-pescatarians-just-lazy-vegetarians/.

6 Nirvana, "Something in the Way," Track 12 on *Nevermind*, Butch Vig, 1991, disc.

7 The reason why I have set the time frame to end in 2018 is that the digitised source material I have used in this chapter is only available up to 2018. All the later digitised sources are copyright-protected content and thus not visible via the digital archives of the Finnish National Library.

Figure 8.1: The fish hatchery of Ruununmylly in Finland in 1913. Photo by T. H. Järvi. Finnish Heritage Agency, Ethnographic Picture Collection. https://finna.fi/Record/museovirasto.6357BFF213DEA2FF4A1DC48165B5AB87. CC BY 4.0.

which the government targeted funds to develop the fishing industry. This act encouraged fishery-promoting organisations to intensify fish farming.[8]

Altogether, the above-mentioned growth of the fish hatching industry from the late nineteenth century to the mid-twentieth century was small compared to the overall growth and change in the fish farming industry in the latter part of the twentieth century. One of the major changes was the commencement of the commercial breeding of fish for direct human consumption in the 1960s. Simultaneously, the fish hatching industry also grew significantly. Some of the main reasons for these changes were new technologies and the implementation of factory-made dry forage for fish.[9]

In Finland, fish farming for food focused on the breeding of rainbow trout. This industrially farmed fish species was even given its own Finnish name *kirjolohi* in 1965 by President Urho Kekkonen. Another significant change in the fish

8 See, for example, Vaito Mustajärvi, *Kalanviljelytekniikka* (Helsinki: Riista- ja kalatutkimuslaitos, 1999), 1.

9 See, for example, Pertti Manninen, *Kalankasvatuksen vesistövaikutuksista* (Helsinki. Vesihallitus, 1982), 5.

farming industry was the implementation of the open net-pen system in the late 1960s, in which fish are situated in natural waters in large net cages separating them from the surrounding environment. Prior to this fish had been mainly farmed in large artificial fishponds.[10]

Thereafter, several fish farming companies were established. The high season of the Finnish fish farming industry occurred at the turn of the 1990s. At this time, the yearly number of farmed fish was about 19 million kilos.[11] In the 2000s and 2010s, the number of farmed fish decreased to a yearly number of approximately 12 million kilos. This is still a large number when compared with the 1970s, for example, when the yearly number of farmed fish was between one to three thousand kilos.[12] According to fish farmers, the reasons for this decrease are the tightened environmental regulations and the cuts to the yearly quota restrictions of farmed fish.[13] In the twenty-first century, almost two-thirds of Finnish fish farming has been situated in the Archipelago Sea and near the Åland Islands.[14]

The shared history between farmed fish and humans in Finland is long and it includes various changes, from which perhaps one of the most crucial has been the establishment of fish farming specifically for human consumption, as well as fish cultivation to supplement fish stocks in natural environments. In this chapter, I will focus on how fish sentience and agency have been described and understood in the public discussion in the context of both fish farming methods.

As research material, I use Finnish newspapers and magazines that have been digitised by the Finnish National Library. This database currently contains over 23 million pages of digitised material published in Finland from the early modern period up to 2018.[15] This is already quite an extensive sample to reflect

10 See, for example, Manninen, *Kalankasvatuksen vesistövaikutuksista*, 5; Matti Hakanen et al., *Kalanviljelyn elinkeinotutkimus 1987* (Kuopio: Kehitysaluerahasto Oy, 1987), 4–5; Saaristoasiain neuvottelukunta, *Kalankasvatus saaristossa* (Helsinki: Sisäasiainministeriön aluepoliittinen osasto, 1987), 6–9; Mustajärvi, *Kalanviljelytekniikka*, 1.

11 See, for example, Manninen, *Kalankasvatuksen vesistövaikutuksista*, 5; Hakanen et al., *Kalanviljelyn elinkeinotutkimus 1987*, 4–5; Paula Partanen (eds.), *Kalankasvatus ja vesien suojelu* (Helsinki: Vesi- ja ympäristöhallitus, 1988), 6.

12 See, for example, Saaristoasiain neuvottelukunta, *Kalankasvatus saaristossa*, 8; Mustajärvi, *Kalanviljelytekniikka*, 3; Ympäristöministeriö, *Kalankasvatuksen ympäristönsuojeluohje* (Helsinki: Ympäristöministeriö, 2013), 11–14.

13 "Kalanviljelyn historiaa Suomessa," Suomen kalankasvattajaliitto ry, accessed March 18, 2022, https://www.kalankasvatus.fi/kalanviljely/historiaa/.

14 Ympäristöministeriö, *Kalankasvatuksen ympäristönsuojeluohje*, 11–14.

15 "Digital pages online," National Library of Finland, accessed May 4, 2022, https://digi.kansalliskirjasto.fi/stats?set_language=en.

Figure 8.2: Farming of rainbow trout in net cages in the Finnish Archipelago Sea in 1983. Photo by Teuvo Kanerva. Finnish Heritage Agency, Historical Picture Collection. https://finna.fi/Record/museovirasto.22AC06524DC33D3C6125DE6E4382871B. CC BY 4.0.

how Finnish public discussion perceived and understood different phenomena and reacted to them. To gather my resource material, I searched the database using the term "farmed fish" (*kasvatettu kala*). I chose this search term, instead of "fish farming" (*kalankasvatus*), as it does not refer directly to livelihood. In this way, I will gain access to a broader discussion regarding the fish themselves that was utilised in the fish farming industry. With the above-mentioned method, I found 502 newspaper and magazine articles from the database and all these texts constitute my research material. In what follows I will therefore only focus on the Finnish-language research material published in Finland.

In methodological terms, this study contributes to the field of digital humanities, as it utilises the digitised sources in which the printed text has been converted into machine-encoded text via optical character recognition (OCR) technology. As the sources have been processed with OCR, I have been able to make word searches

within a vast amount of newspaper and magazine material over a long period.[16] Nevertheless, I have also used the traditional methods of qualitative data analysis by carefully reading and analysing the content of all 502 texts.

Theoretical background and previous studies

My study contributes to the theoretical field of human-animal studies that seek to understand the relationship between humans and animals. It takes into consideration the role of non-human animals and their impact on the multispecies past, present, and future of our planet. In other words, human-animal studies do not focus on animals per se, similarly to natural scientists. Rather, the approach is to explore the interactions between humans and animals.[17]

Most of the studies that have paid attention to fish intelligence and sentience in the context of the fish farming industry have been conducted in natural sciences.[18] These are important studies, but they are not able to answer questions regarding how people who utilise and exploit these animals perceive them. For this reason, it is important that we also study farmed fish in the social sciences and humanities.

Hitherto, the clear majority of studies concerning Finnish fish farming, conducted in the field of social sciences and humanities, have been made from the perspective of the fish farming industry. This means that the studies have mainly focused on the actions and impact of the industry, defining fish only as an output unit; not a being that has agency and intelligence affecting the industry and the world around us.[19] Nevertheless, there are a few exceptions. For instance, the article "Who Cares about Farmed Fish? Citizen Perceptions of the Welfare and the Mental Abilities of Fish" by the social scientists Saara Kupsala, Pekka Jokinen and

16 See, for example, Hannu Salmi, *What Is Digital History?* (Cambridge: Polity Press, 2020).

17 See, for example, Margo DeMello, *Animals and Society* (New York: Columbia University, 2012), 4–6.

18 See, for example, Christine Jackson, "Laboratory fish: impacts of pain and stress on well-being," *Contemporary Topics in Laboratory Animal Science* 42:3 (2003): 62; Victoria Braithwaite, and Lars Ebbesson, "Pain and stress responses in farmed fish," *Revue scientifique et technique (International Office of Epizootics)* 33 (2014), accessed March 18, 2022, doi:10.20506/rst.33.1.2285; Becca Franks, Christopher Ewell and Jennifer Jacquet, "Animal Welfare Risks of Global Aquaculture," *Science Advances* 7 (2021), accessed March 19, 2022, doi:10.1126/sciadv.abg0677.

19 See, for example, Timo Peuhkuri, *Tiedon roolit ympäristökiistassa. Saaristomeren rehevöityminen ja kalankasvatus julkisen keskustelun ja päätöksenteon kohteena* (Turku: Turun yliopisto, 2004); Salmi et al., *Kalankasvatus saaristoelinkeinona. Saaristomeren ja Ahvenanmaan kesäasukkaiden näkemyksiä kalankasvatuksesta ja kestävästä kehityksestä* (Helsinki: Riista- ja kalatutkimuslaitos, 2004).

Markus Vinnari is a very exceptional and significant work exploring how people in Finland have understood the consciousness of fish as part of the fish farming industry.[20]

The study by Kupsala, Jokinen and Vinnari is based on a survey conducted in 2010. They concluded that people in Finland perceive farmed salmon as "more 'simple' with its experiential life than traditional farm animals (pigs, chicken, and cattle)." They also discovered that "although roughly 60 per cent of Finns believed that salmon can feel pain, a fifth still deny it, while this kind of denial of sentience was minimal for other animals."[21] The above-mentioned study is very interesting and important, but it does not include historical depth. Although the survey included answers from people of different ages, these responses can be seen to reflect the cultural discourses dominant in 2010, when the survey was conducted. The way how we understand and perceive other animals is constantly changing in time and culture.[22] Thus, it is interesting to examine how fish sentience and agency have been described in Finnish public discussion for a long period from the beginning of fish farming to this day.

Overall, the study of the long-term relationship between humans and farmed fish has not been studied by historians in Finland with an approach that takes into consideration fish agency and mental abilities. There are some historical surveys published by the active members of the fish farming organisations, but these are without exception written from the perspective of livelihood, not from the perspective of fish.[23]

In this chapter, I first explore how fish agency and consciousness are visible in public discussions concerning fish farming. I then analyse texts that contain a discussion of fish agency, intelligence and the ethical treatment of farmed fish. I investigate why these things are brought out in the context of fish farming and what they tell us about our constantly changing long-term relationship with farmed fish.

20 Saara Kupsala, Pekka Jokinen and Markus Vinnari, "Who Cares about Farmed Fish? Citizen Perceptions of the Welfare and the Mental Abilities of Fish," *Journal of Agricultural and Environmental Ethics* 26 (2013), accessed February 18, 2022, doi:10.1007/s10806-011-9369-4.

21 Kupsala, Jokinen and Vinnari, "Who Cares about Farmed Fish?," 124, 131.

22 See, for example, Joanna Bourke, *What it Means to be Human* (Berkley: Counterpoint Press, 2011), 4–5; Otto Latva, *The Giant Squid in Transatlantic Culture: The Monsterization of Molluscs.* (London: Routledge, 2023), 9.

23 See, for example, Kauno Peltoniemi, *Taistelu kirjolohesta: muistelmia uuden elinkeinon, kalanviljelyn, alkutaipaleelta Suomessa* (Helsinki: Suomen lohenkasvattajain liitto, 1984).

The perception of farmed fish in Finnish public discussion

From the chart below (Figure 8.3), which presents coverage of references to "farmed fish" in Finnish newspapers and magazines from 1850 to 2018, one can see that the percentage share of the discussion of farmed fish in these publications is quite small in terms of the overall printed material. The highest peak in the level of this discussion took place at the beginning of the 2010s, but covers only a very small percent of the overall number of digitised newspaper and magazine pages from the Finnish National Library. The small number of texts about farmed fish, compared to the overall data, does not, however, prevent its use as research material. The material still contains more than 500 articles on farmed fish, which is a very good sample for this study.

From the chart, one can notice, for instance, the changes in the overall discussion of these animals. In the period from 1850 to 1900, there were no references to "farmed fish" in Finnish public discussion. Some news began to appear in print after this. By the late 1950s the quantity of writings that mentioned "farmed fish" had grown substantially, reaching a peak at the beginning of the 2010s. The overall curve can be also divided into three different interesting sections. The first is a peak in the discussion of farmed fish that took place in 1934. A second interesting feature is the generally smooth period of discussion from 1955 to 2000 (although annual variations did occur). Last, the period from 2000 to 2018 witnessed tremendous growth in the discussion of farmed fish compared with the previous 150 years. Nonetheless, this discussion decreased significantly after 2015.

The reason for the peak in 1934 relates to a piece of news that declared how there had been a success in fish planting in Finnish natural waters in 1933. In this year, governmental fish hatcheries dispersed almost 15 million fish fry into different waters. This news article circulated broadly in the Finnish press, and it was published in several different newspapers in Finland. Thus, together with other news articles concerning farmed fish published in 1934, it contributed to a peak in the curve for that year.[24]

The sustained increase in newspaper and magazine articles that included references to "farmed fish" after 1955 is most simply explainable by taking into ac-

24 See for example, Anon., "Noin 15 milj. kalanpoikasta istutettiin viimevuonna vesistöihimme," *Aamulehti*, September 28, 1934, 2; Anon., "59,270,555 kalanpoikasta sekä 6,200,000 hedelmöitettyä mätimunaa istutettiin 5 vuoden aikana maamme vesistöihin," *Ilta-Sanomat*, September 28, 1934, 1; "Kalanviljelystoiminta vilkkaassa käynnissä," *Kaiku*, September 28, 1934, 1; "Kymijokeen istutettiin viime vuonna kaloja," *Etelä-Suomi*, September 29, 1934, 2.

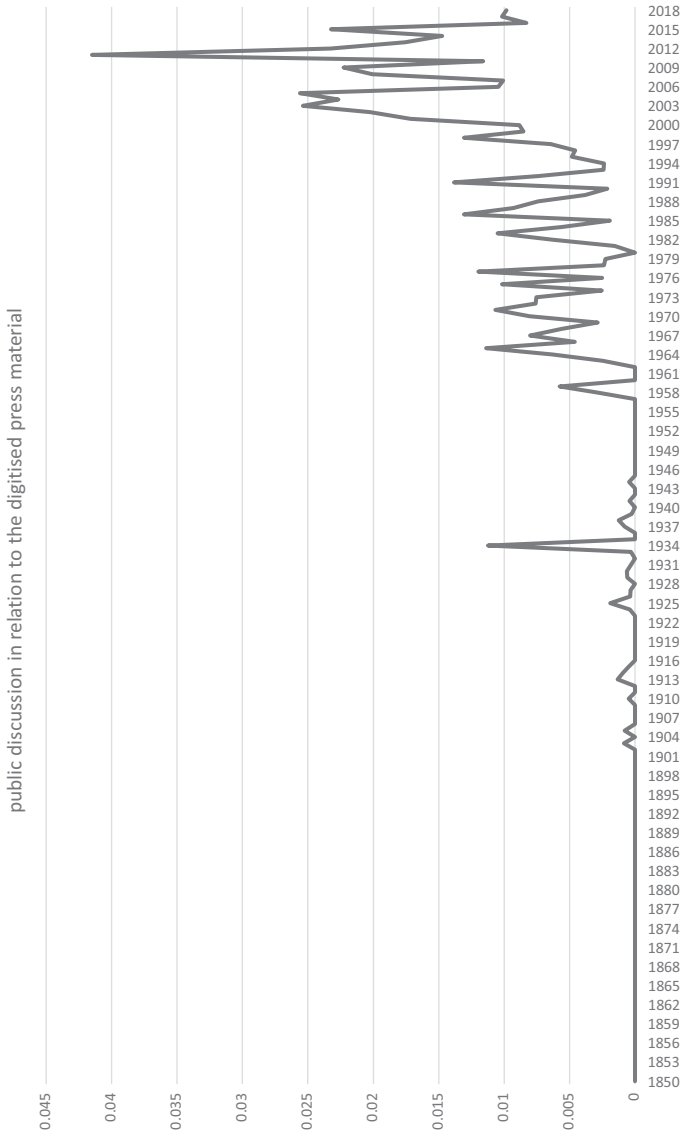

Figure 8.3: References to "farmed fish" in Finnish newspapers and magazines concerning the overall data digitised by the Finnish National Library. The numbers on the left-hand side of the chart indicate the percentage of the articles compared to the overall data and the numbers at the bottom of the chart represent the number of years.

count emergence of fish farming as a direct source of food in the same decade.[25] The size of the Finnish fish farming industry grew significantly after this development, which is why it began to play a larger role in public discussions. The seeming growth of the public discussion concerning farmed fish after the 2000s is much more complicated to interpret. According to the sources, the reason for this growth seems to be due to an increase in the discussed themes related to farmed fish. From the 1950s to the 1990s, the public discussion concerning farmed fish concentrated mainly on fish farming as a business.[26] For instance, in 1970 a publication presented the farming of rainbow trout in Finland and emphasised that there was still "plenty of clean flowing waters" in Finland for fish farming, and that "the demand for farmed fish has proven to be greater than production."[27]

Before the 2000s, different articles in newspapers and magazines mainly followed the content of the above quote. In the 2000s, the discussion of themes, such as the environmental impact of fish farming, the health effects of farmed fish and different discussions about how to prepare various kinds of food from farmed salmon, began to define the discussion of Finnish fish farming more than before. For instance, the environmental impact of fish farming became a much-discussed topic. Many news articles appeared about how fish farming led to the eutrophication of natural waters and how one should preferably buy domestic wild fish than farmed fish in order to help the badly eutrophicated Baltic Sea.[28] Much of the news published in the 2000s and 2010s also criticised the environmental impact of the farmed fish that were imported to Finland.[29] In the 2010s, news about the health effects of fish, for instance, emphasised that the levels of dioxin in farmed fish were much less than in wild fish caught in the Baltic Sea. Nevertheless, there were also articles that mentioned the residues of antibiotics in farmed

25 See, for example, Mustajärvi, *Kalanviljelytekniikka*, 1, 4–5.

26 See, for example, Anon., "Kalan tuotantoviljelyä maatilojen pienvesistöissä kehitetään," *Maaseudun Tulevaisuus*, May 30, 1959, 13; Anon., "Perheelle 30.000 markan tulot vuodessa lohenkasvatuksesta," *Uusi Suomi*, December 23, 1964, 18; Anon.,"Euroopan suurin lammikkokalan tuotantolaitos Rautalammilla," *Maaseudun Tulevaisuus*, October 1, 1970, 8; Anon., "Lohet uivat lautasille," *Suomen Kuvalehti*, October 23, 1970, 8.

27 "Euroopan suurin lammikkokalan tuotantolaitos Rautalammilla," 8.

28 See, for example, Anon., "Merilohi ja kirjolohi kuormittavat yhtälailla," *Etelä-Suomen Sanomat*, November 24, 2001, 16; Elina Korkee, "Itämeri tarvitsee apua sisämaasta," *Länsi-Savo*, April 21, 2008, 11.

29 See, for example, Anon., "Norjalaiset napanneet aimo palan lohimarkkinoista," *Länsi-Savo*, March 13, 2001, B4; Lauri Kontro, "Kalavaje," *Maaseudun Tulevaisuus*, March 12, 2014, 5; Sanna Kipinä-Salokannel, "Särkien syöminen vesiensuojeluteko," *Lauttakylä*, March 1, 2017, 15.

fish.[30] Cooking recipes published in newspapers and magazines also began to feature instructions about how to prepare different kinds of farmed rainbow trout dishes in the 2010s. These cooking articles sometimes emphasised how the meat of farmed rainbow trout is different than the meat of wild salmon.[31]

In the long run, the above-mentioned themes of business, environmental impact, health issues and food-related concerns are the most visible thematic categories when one reads the Finnish newspaper and magazine texts concerning farmed fish. Within these themes, fish are almost always mainly described as being a product that is a kind of lifeless object; a consumer good with no agency or will of their own.

The number of texts highlighting the agency and consciousness of the farmed fish only represents a small fraction of the articles discussing these animals. In the chart below (Figure 8.4), the yellow line demonstrates the number of texts that mention fish agency and consciousness in the context of fish farming. If we compare the outcomes of the study by Kupsala, Jokinen and Vinnari, which conclude that Finns do not perceive farmed salmon as sentient beings like other farmed animals,[32] with the results shown by the chart 8.4, it is not surprising that the number of texts describing the agency and consciousness of the farmed fish form only a tiny fraction of all the writings. However, what is surprising is that discussion of pain suffered by fish and their consciousness in the context of the fish farming, which was discussed widely in the global press during the 2000s and the 2010s,[33] was not reflected in news coverage in the Finnish press.

It is difficult to define why the news articles concerning the pain and consciousness of farmed fish circulating in the global press were not translated into Finnish and published in Finnish newspapers and magazines. After all, Finnish publications often republished international news articles.[34] Was it because the Finnish journalists did not feel these were sufficiently newsworthy for their read-

30 See, for example, Jussi Lankinen, "Suomalainen saa dioksiininsa Itämerestä," *Etelä-Suomen Sanomat*, January 25 2011, 7; Seppo Lahti, "Syö jos uskallat," *Kokkola*, March 30, 2016, 16.

31 See, for example, Panu Pälviä, "Monta herkkua lohesta," *Ilta-Sanomat*, April 20, 2017, 29.

32 Kupsala, Jokinen, and Vinnari, "Who Cares about Farmed Fish?," 131.

33 See, for example, Andrew Davies, "Food: It's a Pain, but There's still a Passion for Poisson," *Birmingham Post*, May 3, 2003; Kenneth Kidd, "That must be painful. Or not," *Toronto Star*, July 16, 2006; Paul Petersan, "An Aquaculture Reality," *The Washington Post*, December 6, 2007; Tim Carman, "Scientists say fish feel pain. It could lead to major changes in the fishing industry," *The Washington Post*, May 24, 2018, accessed June 10, 2022, https://www.washingtonpost.com/news/food/wp/2018/05/24/scientists-say-fish-feel-pain-it-could-lead-to-major-changes-in-the-fishing-industry/.

34 See, for example, Ullamaija Kivikuru and Jukka Pietiläinen, "Esipuhe," in *Uutisia yli rajojen. Ulkomaanuutisten maisema Suomessa*, ed. Ullamaija Kivikuru and Jukka Pietiläinen (Lahti: Helsingin yliopiston Lahden tutkimus- ja koulutuskeskus, 1998); Turo Uskali, *Ulkomaanuutisten uusi maailma* (Tampere: Vastapaino, 2007).

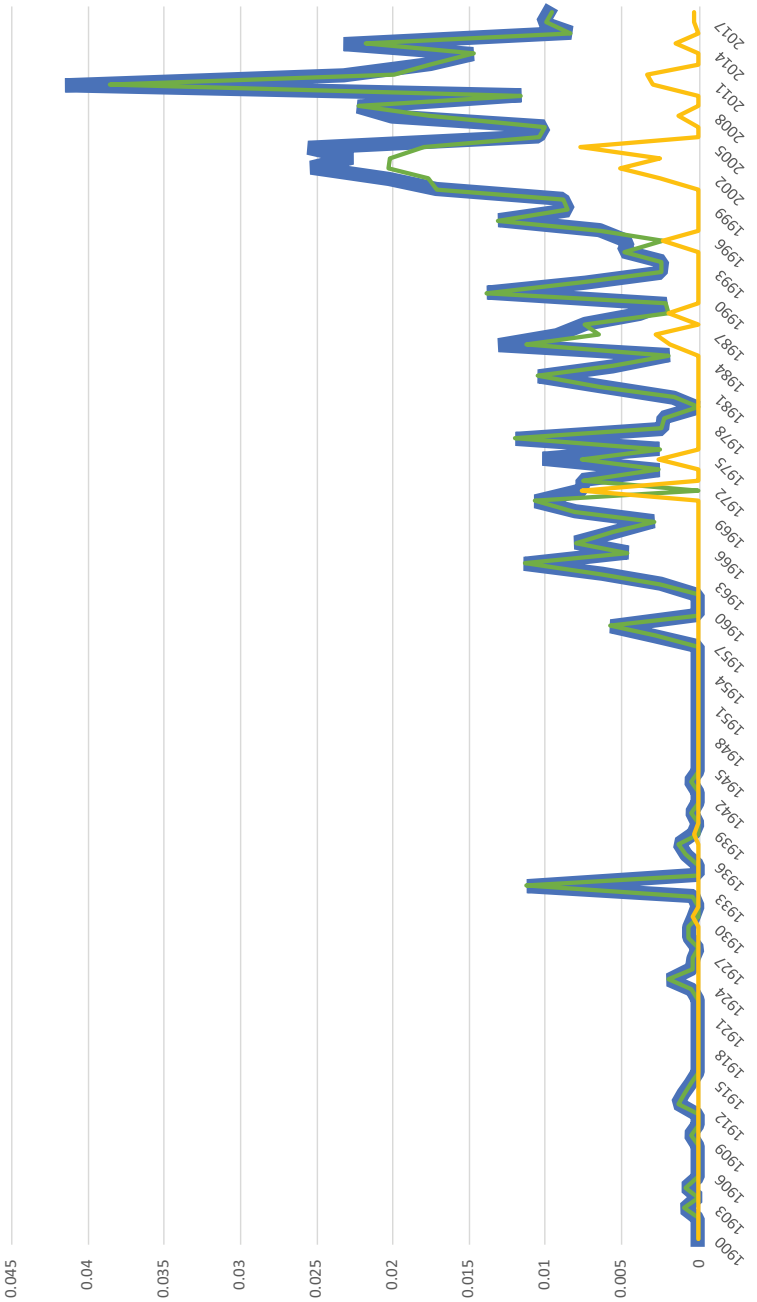

Figure 8.4: A comparison of writings that describe fish as either lifeless products (green curve) or lively and/or intelligent beings (yellow curve), among the texts that mention "farmed fish" (bold blue curve).

ers, or that perhaps the idea of fish as sentient beings was too difficult for them to believe? What is clear is that the large number of newspapers and magazines that have already been digitised by the Finnish National Library do not mention anything about the discussion about the consciousness and pain of farmed fish, which was published, for instance, in Canada, Great Britain, and the United States during the 2010s.

Whatever the reason as to why Finnish newspapers and magazines did not republish international news and opinions about the consciousness and pain of fish in the context of fish farming, the absence of such news tells us something about how the mental abilities of fish and the questions related to the welfare of farmed fish have been understood in Finland. Of course, the way in which the media makes decisions about what to publish does not reflect the mindset of the entire cultural sphere of the nation. Nevertheless, the absence of stories and information about fish consciousness and pain may have had the effect that Finns are not aware of the latest knowledge on the subject and are thus unable to broaden their understanding of the mental abilities of fish. In a sense, this kind of refusal to be able to publicly discuss fish welfare is not even surprising. As Veera Koponen has mentioned, Finns had been lulled into believing that they live in a model country for animal welfare. Nevertheless, the reality was that Finland had begun to fall behind other European Union and Nordic countries that had been progressively updating their animal welfare laws.[35]

The discussion of fish agency and consciousness

The reality that Finland had begun to lag behind in animal welfare standards becomes clear if one compares the content of the newspaper and magazine articles concerning fish farming, which were not mentioned by the Finnish media, particularly in regard to questions related to the agency and consciousness of farmed fish. However, although the number of such articles is low, it is still reasonable to analyse how and why these texts discuss fish agency and consciousness.

The newspapers and magazine articles that I have found that discuss the agency and consciousness of farmed fish consist of various kinds of text. The common feature in these writings is that fish intelligence or sentience is not openly discussed, but it can be read between the lines. Moreover, if it is discussed at all, it is presented as a curiosity. The writings published in Finland in the first part of

35 Veera Koponen, "Paluu tulevaisuuteen: Suomi ja sivistynyt eläinsuojelusäädäntö," *Impulsseja* (2021).

the twentieth century, in particular, mention the agency and consciousness of farmed fish with a mixture of humour and curiosity. For instance, in a news article published in 1931, the writer wondered how fish cultivated in a salmon farm in the River Äkäsjoki would act and behave. This is because the name of the river can be understood to refer to the Finnish adjective *äkäinen*, meaning 'irascible.' The writer thus humorously mentioned that perhaps the reason for the inhibited fish farm plan was that people were afraid that the salmons bred near the Äkäsjoki River would become irascible.[36]

The previous example discussed presumed agency, but the first clear mentions of fish agency and consciousness did not appear in Finnish public discussion before the 1970s. For instance, a news article appeared in 1972 about Azerbaijani fish farmers who were cultivating sturgeons and who had stated that this species of fish did not survive in natural waters if they were not offered some activities. In the Finnish press, this news was published among articles concerning natural curiosities and it was entitled "Fish should not be pampered."[37] This piece of news clearly states that fish are not just mindless creatures. Instead, they need to undertake activities that help them to learn how to survive in the wilderness. In other words, one can read between the lines that fish can learn and think. Nevertheless, the need for farmed fish to receive activities and training to learn survival skills could not be written in terms of scientific correctness; instead, the humorous verb 'pamper' was chosen for the title.

The discussion of the abilities of cultivated fish to survive in nature became a more discussed topic in the 2010s. A news article was printed, for example, that presented breeding methods in which the fish fry were exposed to flowing water, changes in water level, and predator fish.[38] In this way, breeders taught survival skills to their fish whereby they would know how to act after they were released into natural waters. In this context, fish were not considered as brainless beings, but intelligent animals that were able to memorise and have cognition.

In another newspaper article, concerning fish cultivation, researchers and conservationists caught fish from the rivers that had planted by fish hatcheries and farms to supplement the natural stock of fish. When they discovered a rainbow trout, they called it a "mollycoddled fish." By this they were implying that farmed and cultivated fish would not be able to survive in natural waters. They proposed a new cultivation method, in which fish spawn would be situated in the

36 Anon., "Kengisfors," *Aitosuomalainen*, October 2, 1931, 4.

37 Anon., "Kalanpoikasia ei saa hemmotella," *Etelä-Suomen Sanomat*, July 7, 1972, 8.

38 Jaakko Pikkarainen, "Kalanpoikasia kasvatetaan luonnonoloja jäljitellen," *Maaseudun Tulevaisuus*, September 7, 2011, 24.

river in which they had grown up and would therefore genuinely be able to learn to survive in natural waters.[39]

Both above-mentioned examples indicate that the intelligence of fish and their ability to learn and act were accepted facts among people who were attempting to cultivate fish as a means of supplying fish stock in natural waters. Nevertheless, what is interesting in this regard is how differently the intelligence of farmed fish was discussed depending on the aims of fish farming. If fish were being bred to supplement natural stock, the discussion included the fish's ability to learn. If fish were being farmed straight for human consumption, their mental abilities were not discussed. This kind of definition of an animal's mental abilities from the perspective of anthropocentric aims tells us a lot about how contradictory the human relationship with non-human nature was during the previous decades and still is today.

Another interesting discussion related to the mental abilities of farmed fish concerns the environmental impact of fish farming industry. Fish farming has faced lot of criticism about its environmental impact in recent decades.[40] Usually, when the environmental impact of fish farming has been discussed in the Finnish press, the reason for these studies has been stated as being due to the concerns of the fish farming industry, in which farmed fish are only viewed as lifeless products. I have discovered only two newspaper articles in which the environmental impact was mentioned as something produced by farmed fish.[41]

The first of these news articles was published in 1975 and it quite explicitly states that the reason for the environmental impact of fish farming was related to the excrement produced by farmed fish.[42] This is extraordinary as the theme was very widely discussed throughout the latter part of the twentieth century and in these writings, the environmental impact of the excrement of farmed animals is explained rather as a side effect of the industry rather than the bodily function of the animals themselves.

Overall, the above-mentioned theme to explain the problems of the animal industry as something stemming from industry, not the agency of the animals exploited in the animal farming, is very common in Finnish public discussion. For example, the environmental impact of the excrement of fur animals has long been described in Finland as a by-product of the fur farming industry, not the fur

39 Markku Peltonen, "Jokitalkkarit koluavat koskessa," *Etelä-Suomen Sanomat*, May 30, 2012, 3.
40 See, for example, Salmi et al., *Kalankasvatus saaristoelinkeinona*, 1.
41 "Huomioita kalankasvatuslaitosten jätteisiin," *Maaseudun Tulevaisuus*, April 19, 1975, 16; Kaisa Rossi, "Kirjolohi edelleen ekotehokas," *Etelä-Suomen Sanomat*, December 9, 2003, 2.
42 "Huomioita kalankasvatuslaitosten jätteisiin," 16.

animals themselves.[43] At the conceptual level, the problem with such a way of discussing the effects of animal farming is that it hides the agency of animals and emphasises their existence only as units of production. This can be seen very well in the context of fish farming.

The reason why the news article published in 1975 departed from this line is probably that it was one of the first commentaries in Finland on the environmental impact of farmed fish. As the fish farming industry was still in its early development phase, the industry was not yet comprehensively institutionalised, but it was also an experimental hobby. For instance, in the early days of fur farming in Finland in the 1910s, many farmers recognised the breathing being living under the fur, but this changed when the fur industry became a serious business in the mid-twentieth century. At this time, fur farmers began to speak about foxes and minks as a final product – furs or skins – when these animals were still alive.[44] It might be that the same lack of institutionalisation in fish farming made some fish farmers perceive the environmental impact of fish as the cause of their agency, not as the impact of the fish farming industry.

Nevertheless, there is also another news article concerning the environmental impact of fish farming that was published in 2003. This is an extraordinary text as in it the CEO of the Finnish Fish Farmers' Association acknowledge the environmental impact caused by the defecation of farmed fish. The reason for the publication of such a statement was not, however, to emphasise the agency of farmed fish, but to show how small the environmental impact of farmed fish was in comparison to farmed cattle and pigs.[45] As this example also shows, the context of the discussion defines whether farmed fish were recognised as possessing agency or not. In other words, the agency of fish can be highlighted if it promotes the industry.

What is interesting here is that when farmed fish, mainly described as a product unit without agency in the context of fish farming, escape from the fish farm, they are accorded a high degree of agency in public discussion. For instance, in 1989, a news article about salmon that had escaped from a Norwegian fish farm was published. The reporter suggested that they would weaken the natural fish stocks in the Tana River, flowing through Northern Finland and Norway.[46] This

43 Otto Latva, "Tuote vai elävä olento? Näkökulmia turkiseläinten historialliseen rooliin Suomessa 1900-luvulla," *Alue ja Ympäristö* 49 (2020), 115–116, accessed March 12, 2022, doi:10.30663/ay.83302.

44 Latva, "Tuote vai elävä olento?," 108–112.

45 Rossi, "Kirjolohi edelleen ekotehokas," 2.

46 Anon., "Norjan kalankasvatus on uhka Tenojoen lohelle," *Etelä-Suomen Sanomat*, August 21, 1989, 9.

also applies to other farmed animals. There are, for instance, numerous pieces of news about wild minks who escaped from fur farms and how these minks affect surrounding nature.[47] Altogether, the discussion that emphasises the agency of the runaway farmed animal, which are usually described as passive and as almost lifeless products when they are situated on farms, reveals a problem in terms of how we understand and define farmed animals today.

In addition to the discussion of how farmed fish that escape from farms subsequently weaken natural fish stocks, it has also been suggested that they can also spread disease among wild fish. Some news articles appeared on this theme in the 2000s. One of the most interesting articles commented on how Norwegian eco-activists had captured and killed farmed fish in Lake Bullaren in Sweden, near the Norwegian border. The reason for the operation centred on the concern of the activists about how the fish farmed in the lake would affect the wild stock of Norwegian salmon. According to the news, the last time people farmed fish in Lake Bullaren, a parasite was discovered from the farmed fish that is dangerous for the wild stock of fish.[48]

Overall, the agency of farmed fish and the descriptions of them as intelligent beings seem to appear in public discussion most often if they are doing something that seemingly does not fit the aims of the industry. One excellent example is the discussion of the problems of fish feeding that arose in the summer of 2018. This was a really warm summer in Finland and farmed fish refused to eat. Two newspapers wrote about this as a problem for the fish farming industry, although the fish were the ones that did not want to eat.[49]

Altogether, it seems to be very typical in Finnish public discussion to ignore and underestimate the agency and intelligence of farmed animals. Nevertheless, the abilities of farmed animals to act and think are highlighted in public discussion if they are doing something that hinders the industry. For instance, if farmed animals escape from a farm, they are attributed with a high degree of agency, which is usually described negatively. The above-mentioned features only apply to animals bred for human consumption. For instance, if one is talking about fish that are bred to supply natural stock, it is much more accepted to discuss their agency and intelligence. In this context agency and intelligence are seen as positive abilities.

47 Latva, "Tuote vai elävä olento?," 116–118.

48 Anon., "Aktivistit tappoivat lohia Ruotsissa," *Länsi-Savo*, August 23, 2002, 13.

49 Kari Manninen and Tuukka Tuomasjukka, "Kalojen kasvatus kärsii helteestä," *Karjalainen*, July 27, 2018, 14–15; Kari Manninen, "Suomeen vajetta kirjolohesta," *Savon Sanomat*, July 27, 2018, 10–11.

The discussion of the ethical treatment of farmed fish

The discussion of the ethical treatment of farmed animals is the most clearly distinguishable theme in the public discussion of farmed fish from other farmed animals. For instance, the ethical treatment and the well-being of fur animals and cattle have been much discussed,[50] but the treatment of farmed fish not nearly as much. One of the main reasons for this is the matter examined at the beginning of this chapter: the scientific community has long explained that fish are unintelligent and somehow lesser animals than, for instance, mammals. This discussion has had its impact on the wider public but also ethical treatment. In our culture, the human understanding of the intelligence of animal species has traditionally defined the worth of every species. This worth has also defined how humans have treated these species.[51]

In the case of fish, ethical treatment seems to depend very much on the context in which humans and fish encounter each other and on how humans perceive fish. Not all humans automatically treat fish as lifeless objects, as some have respect for their life and suffering. As I mentioned at the beginning of this chapter, the Finnish animal welfare societies organised events for fishmongers at the beginning of the twentieth century as a way to teach the ethical treatment of fish.[52]

Overall, the ethical treatment of fish has been discussed occasionally in the Finnish public forums from the late nineteenth century to the current day.[53] Nonetheless, in the context of fish farming it has not been discussed very much. One of the only mentions of the ethical treatment of farmed fish that I have come across in Finnish newspapers and magazines is a short news article about how Norwegian fish farmers were planning an ethical marking for farmed fish. This would enable the fish to have more space to move in an open net-pen system. The reason for this was that customers had begun to demand ethically breed fish.[54] The news article in question contained a section that stated the following: “Fish

50 See, for example, Kupsala, Jokinen, and Vinnari, “Who Cares about Farmed Fish?”.

51 See, for example, Elisa Aaltola, *Varieties of Empathy: Moral Psychology and Animal Ethics* (London: Rowman & Littlefield, 2018).

52 Mäkinen, “Kalankasvatus ja kalojen suojelu,” 102.

53 See, for example, Anon., “Tarpeetonta eläinrääkkäystä,” *Sanomia Turusta*, June 15, 1893, 2; Anon., “Kaikki kalamiehet kuriin ja nuhteeseen,” *Etelä-Suomen Sanomat*, September 30, 1972, 13; Suomen Eläinsuojeluyhdistys, “Vapaa-ajan kalastajan huoneentaulu,” *Hangötidningen*, June 20, 2003, 15; Christa Lassfolk-Feodoroff, “Animalialle ymmärrystä,” *Warkauden lehti*, May 22, 2018, 16.

54 Anon., “Norjassa halutaan tuottaa vapaata lohta,” *Maaseudun Tulevaisuus*, December 19, 2003, 8; Anon., “Norjassa kasvatetaan vapaata lohta,” *Etelä-Suomen Sanomat*, January 3, 2004, 15.

have been perceived as non-sentient organisms, but consumers today ask about the welfare and conditions of fish in fish farms."[55]

In Finland, this kind of discussion by consumers did not appear in the material I have examined for this chapter. As a matter of fact, only a small amount of information appeared about how farmed fish were treated and how, for instance, they were slaughtered. The first description of how farmed fish were slaughtered appeared in 2017.[56] These findings match the results that Kupsala, Jokinen and Vinnari presented in their article. They concluded that "almost half of Finns think that the welfare of farmed fish is very good or fairly good."[57]

The result suggested by Kupsala, Jokinen and Vinnari is interesting, if one compares it with the nearly non-existent Finnish media content concerning the welfare of farmed fish. It questions whether the results in Finnish newspapers and magazines would have been different if they had translated and published articles from the global press that discuss the ethical problems of fish farming. This is perhaps something that we will see in the future because the public discussion of the ethical problems related to fish farming has seemingly been growing throughout the 2010s. Arguably, it is just a matter of time until there is more discussion of the ethical treatment of farmed fish and their animal rights.

Conclusion

In this chapter, I have examined how fish agency, intelligence and their ethical treatment have been understood in Finnish public forums from the late nineteenth century to 2018. By analysing Finnish newspapers and magazines published during the above-mentioned period that have been digitised by the Finnish National Library I have discovered several sources that describe the relationship between humans and farmed fish in the context of Finnish culture.

First, the public discussion of farmed fish brings out the stark contractionary understanding of fish as a living being in Finnish culture. Usually, the context of the discussion or the aims of fish breeding define the descriptions of the extent to which a farmed fish is judged to be sentient or intelligent. For instance, if one contemplates farmed fish in the context of fish breeding as a means to supplement natural fish stocks, even the cognitive abilities of fish are emphasised. However, if the

55 Anon., "Norjassa kasvatetaan vapaata lohta," 15.

56 Tuula Viilo, "Teurastusmenetelmiä eri laitoksissa," *Maaseudun Tulevaisuus*, September 13, 2017, 8.

57 Kupsala, Jokinen, and Vinnari, "Who Cares about Farmed Fish?," 126.

discussion concerns the farming of fish for human consumption, the agency and intelligence of the fish – and generally the fish themselves as living beings – are ignored. The fish farming industry is at the core of this context; the industry is the agent, and the fish – breathing and defecating creatures – are mainly described as lifeless products. What is interesting is that from time to time the agency and sentience of farmed fish emerges in the texts written about fish farming for human consumption, but usually between the lines. Ultimately, farmed fish are not lifeless products, but humans have only defined them to be such beings.

Second, there has not been any major debate on the welfare and ethical treatment of farmed fish in Finnish public discussion. Yet, a similar kind of discussion has been an on-going phenomenon in the global press for at least 20 years. The lack of such discussion has probably affected the perception of Finns vis-à-vis the welfare of farmed fish as very good or fairly good.

Altogether, the discussion of the agency, intelligence and sentience of farmed fish constitutes only a small fraction of the overall public discussion in Finland from the late nineteenth century to 2018. In a sense, the number of articles concerning these themes already highlights that they have hitherto not been regarded as sufficiently important to be discussed more often in Finnish newspapers and magazines. It will be interesting, however, to discern how the public discussion of the mental abilities and the ethical treatment of farmed fish will change in the future as new generations are seemingly more aware of animal rights, and environmental crises, such as climate change and biodiversity loss, have begun to provoke more discussion that will increasingly challenge our current relationship with non-human animals.

Part III: **Meaning-making for consumption and human-animal relationships**

The final part of this book continues to explore the intensification of animal exploitation, and looks at the phenomenon from diverse viewpoints, such as different fields of history and media studies. The chapters in this section mainly concentrate on the various mechanisms of making animals consumable, but also shed light on the human-animal relationships that are formed in the different phases of production. The authors explore, for example, what has happened to human-animal relations on farms during the industrialisation process and how these relationships are represented to consumers. As Matti O. Hannikainen reminds us in his chapter, the discussion on consumption does not just concern farm animals, but also wild animals that are utilised commercially, particularly fish.

While Karen V. Lykke, Kristian Bjørkdahl, Karin Dirke and Tobias Linné focus on fairly recent or contemporary representations of farm animals and animal-based food in their chapters, Matti O. Hannikainen and Carin Martiin provide a longer time span in their analysis of the changes in fishing and dairy industry, respectively. As both Hannikainen and Martiin show, the efforts to intensify both fishery and dairy husbandry began in the nineteenth century. Although the relationship between fish and humans is extremely one-sided, consisting mainly of fish being killed and eaten, as Hannikainen points out, there have been interesting differences in classifying edible and valuable fish. These conceptions have mirrored scientific discourses on fish, which have been strongly tied with commercial values, deeming small and bony fish as worthless "trash fish." Even though the fishery industry and dairy husbandry differ significantly as modes of animal-based food production, there are similarities in their long-term development in striving towards rationalisation and utilising novel scientific ideas and technologies. In dairy farming, this is most visible in the rapidly decreasing number of farms, rising herd sizes and increasing use of technology, which began to be especially noticeable in the 1960s. As Carin Martiin suggests in her chapter, these factors have led to increased distance between farm workers and cattle, as many working stages are controlled by technology, and in large herds there is not enough time to pay attention to each animal individually.

Regarding distancing, a typical feature in industrial animal production systems is that the consumers are alienated from farmed animals in spatial, social and cultural terms, as Lykke and Bjørkdahl highlight in their chapter. As most people in the Nordic countries have lived in urban areas for decades, few people have contact with farm animals or personal experience of their living conditions. The food industry and the farmers have reacted to this alienation in different ways, as the chapters in this section show. On the one hand, the ignorance of the general public has been taken advantage of in promotion, by blurring the connection of living animals and meat, assuring the welfare of animals and showing pic-

https://doi.org/10.1515/9783110787337-012

tures of “happy cows.” On the other hand, many farmers are worried about the alienation of consumers and want to show “real life” on farms, for example on their social media accounts. However, as Linné suggests in his chapter, their aim of transparency and showing the cows as individuals with human-like emotions and characteristics who willingly participate in production may naturalise the exploitation of animals. Furthermore, the chapters of Lykke, Bjørkdahl, Dirke and Linné demonstrate that the self-understanding of having a high level of animal welfare is strong in Nordic countries, and this is constantly used as an argument in promoting animal-based food to consumers. In public discourse, this has become a self-evident fact that usually remains unquestioned. According to Lykke and Bjørkdahl, “matters of production are integrally tied to matters of consumption,” and industrial animal production calls for a consumer who is not willing to know all the details of the life and death of animals used for food – or to think about these uncomfortable realities.

Karen V. Lykke and Kristian Bjørkdahl

9 Pernicious propaganda: The Norwegian Meat Information Office and its "politics of meat promotion"

Introduction

In his book, *The Ecological Hoofprint*, geographer Tony Weis begins from two assumptions: First, that the pace and scale at which meat has shifted "from the periphery to the center of human diets" in the most recent century has been historically unprecedented; and second, that there is nothing "natural, inevitable, or benign" about this process.[1] In contrast to accounts that frame the ongoing dietary shift on the planet as one of improved diets or rising global affluence, Weis counters that the "meatification" of our diets is a process implicated in the "relentless pursuit of profits, capital accumulation and growth in the agro-food sector and capitalism more generally."[2] More specifically, Weis argues that the meatification process can only be understood if we acknowledge how "the biological and physical foundations of agriculture are being rapidly undermined by industrial productivity" in what he calls the "dynamics of the industrial grain-oilseed-livestock complex."[3]

Weis's account of the meatification process puts a heavy emphasis on the political economy of contemporary carnivorism, and with good reason: Land use change induced by new economic structures coupled with increased technological capacity explains a great deal of our current meat consumption – how much we eat, what we eat, and how we eat it. Certain key factors are downplayed, however, if we focus too narrowly on the production side of contemporary carnivorism. In this chapter, we therefore start from the idea that matters of production are integrally tied to matters of consumption – that supply and demand, as historian Roger Horowitz has forcefully argued,[4] must be seen as two sides of the same coin. To illustrate this point, we offer a case study of Norway's so-called

1 Tony Weis, *The Ecological Hoofprint: The Global Burden of Industrial Livestock* (London: Zed Books, 2013), 4.

2 Tony Weis, "Meatification," in *Handbook of Critical Agrarian Studies*, ed. by A. Haroon Akram-Lodhi et al. (London: Edward Elgar, 2021), 561.

3 Weis, *The Ecological Hoofprint*, 8.

4 Roger Horowitz, *Putting Meat on the American Table: Taste, Technology, Transformation* (Baltimore: The Johns Hopkins University Press, 2006).

https://doi.org/10.1515/9783110787337-013

Meat Information Office, which we argue is still engaged in what its original name implied, namely propaganda. By way of a case study of this office and its activities – which is based on archival study of material at the Meat Information Office, including scrapbooks, annual reports, instruction manuals for employees, and a substantial selection of the advertisements and PR material produced over the years – we hope to show that this sort of communication is an underappreciated motor and prerequisite for the meatification process.

The Meat Information Office illustrates how various forms of propaganda that shape consumers' views about animals and meat are an essential component of the meatification process. More specifically, the case we present in this chapter illustrates how there has been a significant detachment between the sphere of production and the sphere of consumption: Whereas previously most of those who ate meat had some experience with rearing animals and perhaps even killing them, and certainly with dressing and preparing meat, this is no longer true of today's consumers. As sociologist Nick Fiddes points out, "[n]owadays, the consumer need never encounter animal flesh in its vulgar undressed state," and in fact, we "prefer not to think too directly about where our meat has come from, [as] unwelcome reminders can be distinctly off-putting."[5] Today's meat-eaters are deeply implicated in the meatification process, but they – significantly – prefer not to know anything much about how meat production happens. In other words, the "grain-oilseed-livestock complex" would not be what it is if it were not for the production of a particular sort of consumer – i.e., one who is willing to look away, avert their gaze, from the realities of contemporary meat production.[6] Changes in land use, economic structures, and technological capacity have thus gone hand in hand with a changing meat culture.[7] As the old ways associated with animal rearing, killing, preparation, and eating were lost, a new meat culture emerged – and it was a culture made in the image, one might say, of the industrial meat apparatus.

We have suggested elsewhere that a fuller understanding of the meatification process, which accounts also for the consumer side of the equation, can be seen

5 Nick Fiddes, *Meat: A Natural Symbol* (Abingdon: Routledge, 1991), 95.

6 This idea is explored further in Tomaz Grusovnik, Reingard Spannring and Karen Lykke Syse, (eds), *Environmental and Animal Abuse Denial: Averting Our Gaze* (Lanham: Rowman & Littlefield, 2021). A seminal text on denial as a social phenomenon is Stanley Cohen, *States of Denial: Knowing about Atrocities and Suffering* (London: Polity, 2001).

7 See Arve Hansen and Karen Lykke Syse, (eds), *Changing Meat Cultures: Food Practices, Global Capitalism, and the Consumption of Animals* (Lanham: Rowman & Littlefield, 2021).

as a process of three interlinked layers of alienation.[8] First, there is *spatial* alienation, which refers to the fact that meat production is concentrated in a dwindling number of sites, while the sites that remain are increasingly located at a distance from where most people live. These sites are increasingly separated from view of ordinary consumers. Next is *social* alienation, which refers to the fact that most people have left the jobs, and thus the social milieus, where one keeps or kills animals or treats their carcasses. This entails not only a loss of skill, but also, more broadly, a relative loss of understanding (and perhaps empathy) with a lifestyle that centres around animals. Finally, there is *cultural* alienation, which refers to the fact that we have grown increasingly incredulous of previously widespread justifications for animal killing and consumption – for instance, the Christian idea of human exceptionalism. The cultural authorities that previously validated animal death and made our consumption of animals acceptable are today no longer available to us, or they are outright challenged.

These interlinked layers of alienation, we contend, have pushed many meat-eaters into a state of denial about the animal origin of meat. We eat more meat than ever before, but we know increasingly little about the meat we eat, and because we are also increasingly unable to justify our high levels of meat eating, we grow disinclined to offer any kind of attention to the issue. Instead, we look away, avert our gaze, and pretend like nothing has changed.[9] In this way, consumers demonstrate what sociologist Linsey McGoey has dubbed "strategic ignorance"; all they know is that they do not want to know.[10]

This situation is exacerbated by the fact that the meat industry (and its allies) is all too keen on filling the gap between production and consumption of meat. These actors have an interest in rendering contemporary meat production precisely as what Weis argues it is not, namely "natural, inevitable, [and] benign." In short, the industry and its allies implicitly tell consumers that their lack of knowledge about how meat is made is no cause for concern, and that the industry itself guarantees that meat is safe, healthy, and sustainable.[11]

This is where Norway's Meat Information Office comes in, since its role and mandate has been, precisely, to increase meat consumption in the Norwegian population. While its name has the ring of an official, governmental, agency, it is in

8 Kristian Bjørkdahl and Karen V. Lykke, *Live, Die, Buy, Eat: A Cultural History of Meat* (Abingdon: Routledge, 2023).

9 Bjørkdahl and Lykke, *Live, Die, Buy, Eat.*

10 Linsey McGoey, *The Unknowers: How Strategic Ignorance Rules the World* (London: Zed Books, 2019).

11 See Kristian Bjørkdahl and Karen Lykke Syse, "Welfare Washing: Disseminating Disinformation in Meat Marketing," *Society & Animals* (2021): 1–19, https://doi.org/10.1163/15685306-BJA10032.

fact a propaganda unit for Norway's meat industry – and until 1941, it was indeed called "The Propaganda Office for Agriculture and Fish."[12] The Office, which was established as an advertising agency for Agriculture in 1933, is funded through an excise tax on meat.[13] The tax is paid by the producers – the farmers themselves – and, beyond funding advertising, is used to finance price regulation, production, and further develop quality and competence within Norwegian agriculture. One important aspect of the Meat Information Office has been to influence consumers to buy particular kinds of meat at particular times of the year, to help balance overproduction and underproduction.

While there are similar information offices for other agricultural products – including dairy, bread and cereals, fruit and vegetables – the Meat Information Office is the wealthiest information office of them all, with the highest budget and the largest staff. In 2009, as it merged with the Information Office for Eggs and Poultry, it became a real force of agricultural advertising in Norway. As we will argue, the Office's capacity to adapt to changing media environments has been unsurpassed, and with the coming of the digital era, its position as a source of information has become quite unique – what it has accomplished in part by collapsing "meat" with "food." The Office has even managed to still concerns about various problems pertaining to meat, such as health, animal welfare, and sustainability – not by rejecting those concerns, but rather, by incorporating and appropriating them. By way of increasingly indirect and subtle ways of promoting meat, the Office has done much to deflect criticism against the meat industry in Norway.

A central reason for our underlining the propaganda label for this Office is the fact that it, as we will show, has employed most all the tricks of the marketing trade, and has not demonstrated notable concern for fact. To the Office, the mandate of increasing meat sales and consumption has been supreme; whatever could contribute to this end, was always contemplated and often materialised. It is not that the Office has produced lies; it is rather that questions of fact have been largely beside the point of what they do, namely, promote meat.[14]

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12 The literal translation is "The Meat Information Office." Its English name does not appear to have been formalised, but it was called the Norwegian Meat Marketing Board for at least two decades, in the 1980s and 1990s, and has also been called the Norwegian Meat and Egg Council. For the sake of simplicity, we refer to it as the Meat Information Office, or just the Office, for the remainder of this chapter.

13 Landbruks- og Matdepartementet, *Rapport. Vedlegg til Evaluering av markedsbalansering I jordbruket: utredning fra et utvalg oppnevnt av Landbruks- og matdepartementet 5. mars 2014. Avgitt 24. juni 2015.* (Oslo, 2015): 58–59.

14 In this sense, one could argue that their mode of operation has something in common with philosopher Harry Frankfurt's definition of "bullshit," a key feature of which is a disregard for

The success of this office is perhaps somewhat surprising, given that the predominant story about Norway's animal agriculture is that it, in contrast to many other countries, does not have an "agro-industry." In Norway, the family farm still lives, the sector is dominated by farmer-owned cooperatives, and the state enacts strict regulation of agricultural production. Consequently, in Norway, agriculture is small scale, animal friendly, and sustainable.

This narrative is, however, in severe need of modification. Since at least the 1990s, there has been centralisation and consolidation in Norway's agricultural sector, the cooperatives are far from as powerful as they used to be, and in many areas, regulation has given way to liberalisation. More importantly, the meatification process has arrived in Norway as it has almost everywhere else. Not only has its agricultural industry produced export successes like Topigs Norsvin, a leading global supplier of pigs, but meat consumption has been growing steadily, and is at, or slightly above, the European average: While in 1959, Norwegians ate 118.9 million kilos of meat, by 2017, that number had climbed to as much as 354.5 kilos.[15]

As sociologists Gunnar Vittersø and Unni Kjærnes argue, Norway's contemporary meat culture is a result of a sustained "politics of meat promotion," which in turn is the product of a combination of factors.[16] It has been substantially helped by deregulations in the agricultural sector, which has aligned Norway to the meatification process in other countries, but it also has something to do with the peculiar role offered to ordinary Norwegians, where consumers, despite the authorities' and industry's "active strategy to increase meat consumption," are left with the responsibility for the problems caused by this increase in the form of "consumer choice." Finally, though, this politics of meat promotion has rested on the industry's willingness to fill the growing information vacuum about contemporary meat production with propaganda that consistently tends towards upping meat consumption – if need be, by stilling any concerns the consumer might have about meat. More specifically, it has relied on a sustained and increasingly sophisticated propaganda effort on the part of the industry's main vehicle for this purpose, namely the Meat Information Office.

truth which does not serve the purpose of persuasion. See Harry Frankfurt, *On Bullshit* (Princeton: Princeton University Press, 2005).

15 Anon., *Utviklingen i norsk kosthold: Matforsyningsstatistikk og forbruksundersøkelser. Report* (Oslo: Helsedirektoratet, 2017), 19.

16 Gunnar Vittersø and Unni Kjærnes, "Kjøttets politiske økonomi – usynliggjøring av et betydelig miljø- og klimaproblem," *Sosiologi i dag* 45 (2015): 74.

Pork! – whenever, wherever

While the Office dates back to 1933, its activities took on increased importance in the era after the Second World War, and especially from the late 1950s onwards, when meat production in Norway increased dramatically. It now became imperative to make sure that consumption developed roughly in parallel to the increased production. Getting Norwegians to buy and eat all this meat was the Meat Information Office's core responsibility. Their tools were price, availability, and marketing, the latter being by far the most important mechanism.[17] They used two notable marketing techniques: The first was to put forth regional specialities as national foods, and the other was to detach specific foods from their seasonal ties. The effect of both was the same: To remove the restrictions on meat consumption that convention had previously imposed on Norwegians. Pork provides an interesting example of both techniques.

Back in the days before refrigeration, the fatty parts of the pig, like the ribs or the belly, would either be cured or eaten fresh around Christmas, while the hams were perfect for curing and drying, and could thus be stored for months or even years. In the decades after the Second World War, however, pork was becoming available throughout the year, and from a commercial perspective, it would be better if people simply ate more pork all year through, and also if people who traditionally ate fish or mutton at Christmas would add pork to their holiday cuisine. By detaching seasonal as well as geographical ties to various cuts of pork, the Office could do just that.

When it came to seasonality, the Office reckoned that, if some people associated pork with Christmas, why not transfer this association from one religious holiday to the next? Easter, for instance, was up for grabs: The days leading up to Easter were poor in food traditions, and Easter Eve and Easter Day were celebrated with whatever meat was available, affordable, or preferred.[18] The Meat Information Office emphasised pork. One example of how they tried to get Norwegians to associate Easter with pork is a full-page ad, from 1972, with a colour photo covering half the page and a text covering the rest, published in the magazine *Hjemmet*. The heading read: "Pork roast with crispy crackling – that is the right Easter dinner!" The next step was to suggest that it was right for any family gathering, at any time of year. In one version of the ad, which used the same

17 Reidar Almås, *Norges Landbrukshistorie IV: 1920–2000: Frå bondesamfunn til bioindustri* (Oslo: Samlaget, 2002), 158–207.

18 "Påsketradisjoner," Norsk tradisjonsmat, accessed August 23, 2021, https://norsktradisjonsmat.no/tradisjonsmatskolen/pasketradisjoner.

photo, and was published in the magazine *Allers*, the heading said: "Roast pork with crispy crackling – that is the right family autumn dinner!"

To make the local tradition of eating pork ribs at Christmas into a general Norwegian tradition, the Office put out an ad in the weekly family magazine *Norsk Ukeblad*, in 1972. In this full-page ad, a colour photo covers almost two thirds of the page and shows pork rib covered in shiny golden crackling. The canned pineapple has been replaced by holly and sauerkraut and there are red Christmas candles in the photo too, to keep the reader in a seasonal mood:

> Crispy crackling, warm fat, sauerkraut, of course. And prunes. And apples and all the other things that go along with the holiday meal, for each and every family through the traditions of generations. *And if it hasn't been a tradition before, it is time to try it this year*.[19]

The ad also provided the no-fail recipe for the rib, so the only thing the housewife needed to do was to ask her butcher for the right size, or to put a ready cut piece of pork rib into her trolley when she went shopping.

Even outside the holidays the Meat Information Office's ads were geared towards associating meat with established food traditions. In an ad that read, "Pancakes with bacon – a traditional dish with modern appeal," it was obvious that food traditions were a means to an end. When they assumed that projecting a certain form of meat consumption as modern would have more appeal, that was precisely what they did. In an ad that read, "Ham-steak – roast pork done easy and modern," consumers were advised to fry a thick slice of a pork joint in a frying pan rather than roast it.

Ads like these were published in what they called the weekly press, i.e., the major family and women's magazines. The ads did not look like ads, but as the regular journalistic content of a magazine – an early form of "native advertising." The only give-away was a small message at the end of the article, with the words "everybody likes meat." It seemed like everybody did in fact like meat, as meat consumption in this period grew dramatically. The Meat Information Office took advantage of this by placing ads that normalised frequent meat consumption, for example one in the weekly magazine *Norsk Ukeblad*, in 1979, which read: "If it's true that you like meat, you probably eat some pork every day; as cold cuts, in sausages and mince, or as pure meat."[20]

These efforts to increase pork consumption would meet its limits, however, since pork was typically associated with fat and unhealthy food in the 1980s and the potential health hazards of overconsuming pork and other "red meats" be-

19 Our emphasis.

20 Ads found in a dated scrapbook in the Meat Information Office archives.

came a concern. Ingenious as ever, the Office found a way around this obstacle: If people were concerned about red meat, they could simply rebrand pork as "light and lean"! The traditional Norwegian word for pork had been *flesk*, i.e., "flesh," and the word had connotations to fat. But by relabelling what had been associated with overindulgence and fatty festive holiday fare with the words lean and healthy, consumers would be more willing to buy it all year around. Although pork is categorised as red meat by nutritionists, its pink rather than red appearance made such rebranding possible: After all, pork had almost the same colour as chicken. In one of its annual reports, the Office did indeed explain that,

> [t]he main goal for this campaign was to profile pork as a lean and nutritious kind of meat that can compete fully with chicken in terms of nutritional arguments. The generic labelling of pork as "The light meat" was introduced to emphasise its nutritious qualities.[21]

After five years' worth of systematic marketing and branding on TV, cinema and weekly magazines this campaign had given results: Now, Norwegian consumers had begun to think of pork as "the juicy lean meat."[22] A later report confirmed the success of the relabelling campaigns in the first half of the 1990s: "After the campaign, three out of four consumers reported that they perceived pork as a lean meat."[23] This effort of rhetorical relabelling not only transformed pork from fat to lean, it also, magically, placed pork in the same healthy category as poultry.

Educating the public

Another problem the Office had to contend with was that, while "everybody likes meat," a growing number of consumers increasingly had no idea what to do with it. The farmers and their Meat Information Office wanted to sell the whole hog, but as women were increasingly quitting the home economics schools and joining the workforce, knowledge and skills related to meat processing and cooking were in decline.

The Meat Information Office filled the educational gap themselves. In addition to the ads, they assembled an army of so-called "meat hostesses" – dressed in brown checked pinafores and armed with a suitcase containing a portable gas

21 Meat Information Office, archive. Annual report 1996, 5.
22 Meat Information Office, archive. Annual report 1992, 6–7.
23 Meat Information Office, archive. Annual report 1996, 5.

stove, knives and brochures – who were distributed across the country's grocery stores. Their main task was to show Norwegian housewives how to cook different meats. Leaflets, brochures, cooking thermometers, and inspiration of all kinds were distributed to whoever wanted to read or listen.[24]

A huge effort to increase meat sales by information and customer education was carried out, and this effort was especially directed towards the "difficult" joints – the tougher cuts of meat that required more time, skills, and attention from the cook. Norway's only food magazine at the time, *Alt om mat*, which was published between 1973 and 1986, emphasised three factors for busy homemakers: price, time, and ease of preparation. The meat industry and its information office were aware of these factors, and while trying to re-professionalise the home cook, they began, at about the same time, transforming the undesirable or tough cuts into minced meat, which require less skills for its preparation. Consequently, the Meat Information Office's leaflets also contained new uses for minced meat. A bastardised international cuisine entered the scene; that of Spaghetti Bolognese, pre-prepped international freeze-dried bases like "Mexican Hot-Pot" or "Hunters Stew" ("just add mince") – even pizza topped with minced meat. Minced meat was fairly inexpensive, fast and easy to cook, and filled all three requirements of price, time, and ease of preparation.

But the ever-growing production of pork caused a persistent need for marketing. In 1981, the Meat Information Office began running ads for "English breakfast." Traditionally, the Norwegian breakfast had consisted of either porridge, oats as cereal, or open-faced sandwiches. Introducing the English breakfast as a weekend treat would obviously increase Norwegians' consumption of bacon. Another ad from around the same time states that "bacon tastes good with many other things too." A list of alternatives to the egg was provided: Had Norwegian consumers tried bacon for dinner, with their traditional fish dumplings, or with their beans, or alongside black pudding, or with fried potatoes? The rib of pork was popular at Christmas, but had people tried it on the barbecue? It could become the all-time summer favourite. In fact, "thousands of Santa Clauses recommend it! Just as easy and just as tasty as pork chops." In short, the Office carpet bombed Norwegian consumers so they would buy minced meat, sausages, bacon, belly of pork, and rib of pork. The promotion campaigns were directed to all major newspapers, and most of the weekly magazines with female readers. In addition, every single shop had information leaflets, and glossy brochures with tempting meat recipes. All the consumers had to do was to buy and cook the meat.

24 Meat Information Office, archive.

Meat on all fronts

The latter campaign is indicative of another aspect of the Office's activity, namely its aim of making meat ubiquitous. While traditional advertising was a very important part of their strategy, the Office also sought to meet its mandate by moving into several other sites and platforms, which allowed them to influence the entire population, including health care centres, kindergartens, schools, and even universities. In these areas, the Office's work resembled something closer to PR than it did advertising, but it was no less important for that. The Office's own annual reports reveal that this type of behind-the-scenes effort was very much a deliberate strategy.

The report from 1990, for instance, conveyed that the Office would now focus less on meat, in general, and more on Norwegian meat, specifically, as a brand.[25] The background for this strategy was the Office's ambition to create a kind of "mental toll barrier," and be one step ahead of the competition from foreign meat imports.[26] Though most of the meat sold in Norway was in fact Norwegian, it had not been branded as such, and the work to do so had now begun. One obvious channel for this work was the media, but in addition to the ads, the annual report from 1993 explained the following:

> 1992 was the year when [the Meat Information Office] really "took off" in terms of collaboration with the editorial press. 45 different food articles were made for the weekly press, and in addition to this an ongoing collaboration with [the daily national papers] VG, Aftenposten and Dagbladet. The collaboration with the press provides ample opportunities to reach a large audience with a lot of meat related content, and is an important supplement to ads and other PR.[27]

Furthermore, the Office had now initiated "a new and exciting collaboration" with the commercial television channel, *TV Norge*, and produced a series of 17 shows with a celebrity actor and performer.[28] The Office also collaborated with a national board for educating chefs, teaching meat cooking. They supported the "Gastronomic Institute" to further educate catering staff. Finally, they collaborated with the Norwegian chefs' national team, which became the face of Norwegian cuisine abroad, competing in international competitions like the Bocuse d'Or. But the Meat Information Office had an even wider range. They had a close collaboration with the Norwegian College of Home Economics teachers, teaching

25 Meat Information Office, archive. Annual report 1990, 2.
26 Meat Information Office, archive. Annual report 1990, 2.
27 Meat Information Office, archive. Annual report 1992, 4.
28 Meat Information Office, archive. Annual report 1992, 4.

courses in home economics for teachers' colleges all over the country; they provided "meat-education" to students of nutrition and to students of home care nursing; and they "established a good contact with the University [of Oslo] department of nutrition research," having "established a yearly tradition of teaching the [University of Oslo nutrition] students."[29] Their efforts were not, however, limited to college and university students: To make sure that all children in junior high school would learn to like and buy meat, they started a project called "Meat for 20," providing 20 kroner per pupil, earmarked for buying beef, pork, or lamb to be included in home economics classes. This amount was later increased to 50 kroner per pupil.[30]

As if that was not enough, the Meat Information Office's main venue of influence had now become morning television – though most TV viewers were probably oblivious of this fact. The Office sponsored and collaborated with *TV2*'s breakfast show, *God Morgen Norge* (Good Morning Norway) by placing one of their former employees on the show, as its regular TV chef. No less than 200 five-minute programmes were created and aired daily; in the first year, 120 of them were about meat. The Meat Information Office shared the sponsorship with the equivalent offices for fish and vegetables, who initially had footed 40 percent of the bill. After five months, however, the Meat Information Office picked up as much as 80 percent of the tab, and also claimed 80 percent of the content. They were, after all, the wealthiest information office of the lot. The annual report states that "[t]his strengthened the Meat Information Office's ability to influence the market."[31]

Appropriating meat concerns

In 1995, one sees signs that the Office is growing more aware of its own role. In the annual report for that year, they had changed the wording of their agenda: It was no longer to increase the consumption of meat, but rather to "spread the joy of food and knowledge about meat by 1) *stimulating* meat consumption and 2) safeguarding the market for Norwegian meat."[32]

The 1995 report also noted a new attitude among consumers labelled "meat reluctance." In response to this trend, the Office began by mapping out concerns

29 Meat Information Office, archive. Annual report 1992, 4–5.
30 Meat Information Office, archive. Annual report 2000, 13.
31 Meat Information Office, archive. Annual report 1995, 15.
32 Meat Information Office, archive. Annual report 1995, 2. Emphasis added.

about ethics, environmental issues, and food security, after which they assembled a campaign designed to put consumers' minds at ease. Also in 1995, booklets on child nutrition were distributed to all the public health centres, so that young mothers would be informed by nurses – whom, as we noted, had already heard lectures on meat while they were students – about the benefits of meat in the diet. The Meat Information Office was indeed ready to inform people about the benefits of meat from cradle to grave: In 1997, they published a book about the pig, which was used to educate six-year-olds.[33] Along with the book itself, there were teacher resources consisting of a booklet and a film. The booklet provided pedagogic advice on how to educate children about the benefits of the pig, and included songs, games, and a list of topics for discussion. "To finalise the project about the pigs [. . .] it might be fitting to 'pig-taste' a hotdog or a ham pizza?"[34] teachers were advised. The schools' curricular textbook on cooking was in part sponsored by the Meat Information Office.[35] In their annual report from 1998 they explain that "they were one of the partners that made it possible to hand out the book for free", and that "the book's share of meat recipes has been taken well care of."[36] At this point, neither the public nor the equivalent office for vegetables protested when pupils were advised to "add sausage, meatballs, or diced meat" to vegetable soup.[37] The task of educating children – and the general public – about food, had now been largely appropriated by the meat industry. It had not always been so, but as the housewife and the home economics colleges had disappeared, the social and cultural void they left was up for grabs – and Norway's equivalent of "big meat" was not slow to respond.

Carnivorism goes digital

Nowhere was the increasingly central role of the Meat Information Office so clear as in its initiative in the digital sphere. Through the dramatic changes to Norwegians' diets at the end of the twentieth century, the Meat Information Office had managed to stay ahead of most of these changes – and in many instances, they were the force behind change itself. With the coming of the twenty-first century,

33 Meat Information Office, archive. Annual report 1998, 13.

34 Kari Ramstad, *Purkeline får grisunger: Læreveiledning* (Oslo: Landbruksforlaget, 1997); Kari Ramstad, *Griseboka mi: Lærerveiledning* (Oslo: Landbruksforlaget, 1997).

35 Meat Information Office, archive. Annual report 1997, 15; Anne Gaarder Amland, Per Alfsen and Alf Börjesson (eds.), *Fra boller til burritos* (Oslo: Universitetsforlaget, 1998), 92.

36 Meat Information Office, archive. Annual report 1998: 13.

37 Amland, Alfsen, and Börjesson, *Fra boller til burritos*, 92.

the Office had its eyes set on the Internet, concluding in an annual report from the late 1990s: "[T]his medium has come to stay, and it is a timely medium for the Meat Information Office."[38] In 2000, the Office launched the webpage *MatPrat* (literally, "food talk"), which in its first year grew from 8000 to 35,000 unique users.[39] Five year later, the number had grown to almost half a million unique users, and by 2009, they covered the whole digital media field: MatPrat even developed a popular smart phone app.[40] No less than ten meat promoting commercials aired on commercial TV and cinema the very same year. The annual report from 2010 provides more detail; it noted that MatPrat was now active on Spotify, had a Twitter account, and a Facebook page with 50,000 likes. "Within a day, we increased our 'likes' on our 'fan page' by more than 7000!"[41]

The MatPrat concept was so successful that it with time overrun the "Meat Information Office" as a "brand" name: In fact, by 2014, MatPrat was the name used on the cover of the Meat Information Office's annual reports. "Branding is part of [the] commercial identity that differentiates MatPrat from competing brands," the report stated, "and awareness [of the brand] is a very important parameter." This brand was extremely successful by any standards; according to the report, 64 percent of Norwegians had "unassisted awareness of MatPrat," which meant that it was "Norway's absolutely most used source for food knowledge, food information, recipes, and food ingredients."[42]

The Meat Information Office's migration to the digital sphere was, in other words, a great success, and expanded even further the already impressive reach of this entity. In 2020, the Meat Information Office, now rebranded as the Information Office for Egg and Meat after its fusion with the information office for eggs and poultry, had a budget of no less than 78.5 million kroner – a figure that completely overshadows that of the other meat information offices (bread and grains at 4.2 million, dairy at 24.5 million kroner, and fruit and vegetables at 23.9 million).[43] Given the fact that the Meat Information Office is bigger than all the rest combined, it is perhaps not so surprising, as the 2014 annual report states, that "80 per cent of the Norwegian inhabitants know the MatPrat brand. This makes MatPrat Norway's leading actor within food and food communication."[44]

38 Meat Information Office, archive. Annual report 1996, 11 and Annual report 1997, 16.
39 Meat Information Office, archive. Annual report 2000, 12.
40 Meat Information Office, archive. Annual report 2005, 16 and Annual report 2009, 31.
41 Meat Information Office, archive. Annual report 2010, 22.
42 Meat Information Office, archive. Annual report 2014, 10–11.
43 Anon., "I dag avgjøres opplysningskontorenes fremtid," Matindustrien, accessed January 4, 2021, https://matindustrien.no/nyheter/2020/i-dag-avgjores-opplysningskontorenes-fremtid.
44 Meat Information Office, archive. Annual report 2014, 4.

For MatPrat to retain its role as a self-proclaimed educator of the Norwegian public in a cultural climate where meat increasingly raises concerns, it needs to respond to these concerns somehow. It does so most elegantly, by appropriating them. First, MatPrat's brand is today so powerful that it, without any loss (indeed, probably with a gain) of status, can include all sorts of non-meat foods to satisfy woke web surfers. A user can click on the banner for "Dish," for example, and choose among categories such as dinner, breakfast, desserts, starters, vegetarian, vegan, cakes and picnic foods, and more. If, however, one clicks on the banner "Ingredients," the basic purpose of the webpage becomes clear. Here, one finds the following items: Beef, pork, lamb, kid, chicken, hen, turkey, duck and goose, reindeer, fish and shellfish, cereals, eggs, game, minced meat, sausages, cured meat, and veal. Cereals and Fish and shellfish are the only ingredients out of water in MatPrat's pool of propaganda. Interestingly, minced meat and sausage were listed alongside animals, as if they were animals in their own right, or perhaps it is the other way around – that animals are listed as if they are simply ingredients.

MatPrat's indisputable success has made it an important communication platform. With no less than 125 000 daily visits and 46 million visits per year the webpage is presently the largest food site in Norway. Recipes is only one of four main banners, the remaining three being "Film," "Learn more," and "Food production."[45] Under the banner "Food production," the Norwegian meat producers provide visitors with their version of topics that have drawn public concern, like sustainability and animal welfare. "Can we compare emissions from a cow and a car" is one clickable article with a docile and kind looking cow gazing into the camera. The answer to this question is no, as "the emissions from cars and cows enter into two separate cycles." Although the article admits that methane emissions from agriculture are not without problems, the article also convincingly conveys how cows are part of a biological carbon cycle in which "ruminants have been a part for hundreds of years."[46]

Another article simply reads "Animal husbandry" in which the teaser reads: "Learn more about the cow, sheep, chicken, egg and reindeer. What do they eat, how do the live, how is the animals' welfare, are antibiotics used and how are they put down?" When the visitor clicks this bait, a new page appears with a new series of articles, all introduced by another teaser: "What is the definition of sustainability and sustainable development? And what is sustainable food produc-

45 "20 år med MatPrat," MatPrat, accessed June 24, 2022, https://www.matprat.no/artikler/tema/20-ar-med-matprat.

46 "Kan vi sammenlikne utslipp fra ei ku og en bil?," MatPrat, accessed June 24, 2022, https://www.matprat.no/artikler/matproduksjon/kan-vi-sammenlikne-utslipp-fra-ei-ku-og-en-bil/.

tion in Norway? Learn more about climate, environment, emissions, biodiversity and future food." The answer to these questions is not immediately offered. Rather, the clickable articles, like "Get to know the Norwegian pig!," leads its readers into a labyrinthine new page posing the question: "Where does our food come from? Meet Norwegian pig farmers and pigs in their piggeries from the piglets are born to when they are slaughtered."

It is perhaps not so surprising that readers are led into this particular digital labyrinth, as media attention has been uncomfortably critical with regards to animal welfare among Norwegian pig farmers.[47] The need for counter-narratives is self-evident. The excellence of the caring Norwegian pig farmers is further projected through a series of a clickable films; below one image of a farmer, one reads among other things that, "[s]ociety's attitudes, traditions and values is reflected in laws and regulations," and that, "[a]nimal welfare is a complex term that can be defined in different ways." Six clickable articles (five on pigs and one on the low use of antibiotics in Norwegian chicken operations) are then offered to convey the Norwegian farmers adherence to the animal welfare laws and regulations. If a visitor scrolls down rather than clicks, the final message is illustrated with a pig staring into the camera. The message concludes: "To ensure good animal welfare, the pig farming industry has established an animal welfare programme for all Norwegian pigs."[48] (Such a programme is needed: In December 2017, public outrage erupted when a Norwegian Food Safety Authority (NFSA) inspection revealed serious violations of animal welfare regulations. In the farms inspected, as many as 73 percent were found to violate the animal welfare regulations.[49] In a report published in March 2022, 53 percent of all farms visited broke one or several animal welfare rules, while they found wounded or sick animals in as many as 24 percent of the farms).[50]

In conclusion, as the webpage MatPrat grew, it became increasingly influential as a source of information not just about meat, but about food in general. While it began as a website for recipes, it has over time morphed into an impor-

47 Bjørkdahl and Lykke, "Welfare Washing."

48 "Svineproduksjon," MatPrat, accessed June 24, 2022, https://www.matprat.no/svineproduksjon/.

49 NFSA., *Er velferden for slaktegris god nok? Mattilsynets tilsynsprosjekt på slaktegris i Rogaland [Report]* (Oslo: Mattilsynet, 2018).

50 "Sammen om god dyrevelferd. Tilsynskampanje om velferd for svin 2021–2022," Mattilsynet, accessed June 24, 2022, https://www.mattilsynet.no/dyr_og_dyrehold/produksjonsdyr/svin/tilsyn_-med_velferden_for_svin_2021_2022/forelopige_funn_nasjonal_tilsynskampanje_om_velferd_for_svin_3_tertial_2021.46061/binary/Forel%C3%B8pige%20funn%20Nasjonal%20tilsynskampanje%20om%20velferd%20for%20svin%203.%20tertial%202021.

tant information channel about agriculture, providing propagandistic views on animal farming and the process of making meat from field to fork. The site is well aware of contemporary concerns surrounding meat, but it deals with these concerns largely by appropriating them. MatPrat sheds critique like water off a duck's back: Visitors to the website can click through article after article that lead in the direction of answers to questions of sustainability, climate emissions or animals' welfare issues, but critiques of meat production on these grounds is never met head on. Rather, another story is told: Climate issues are met by explaining Norwegian grazing traditions and the high animal welfare among grazing ruminants. Animal welfare issues are met by stories of happy animals and special programmes that supposedly improve animal welfare even further. In sum, the readers are led back to the guilt-alleviating idea that Norwegian meat is "natural, inevitable and benign."

Conclusion

As we have pointed out, the mandate of the Meat Information Office is – and has always been – to increase meat consumption in Norway. As we have shown, this is an objective it has fulfilled most successfully by establishing a wide presence in the media itself as well as in a long line of arenas behind the media – sponsoring journalists, chefs, and even TV productions, presenting itself as a prime source of information for teachers from the nursery to the university level. In short, the Meat Information Office was both within and around and part of every conceivable food arena in Norwegian society. With the coming of the digital age, the Office has managed not only to update and consolidate its position, but to greatly expand it, so that this entity, whose sole purpose is to increase meat consumption, now is Norwegians' prime source of information not just about meat, but about food as such.

This is a critical situation, since, as we explained at the beginning of this chapter, consumers today are alienated from the sphere of production and prone to denial of the realities of meat production. Whether they are strictly speaking ignorant of how meat is made, or whether they choose to marginalise what they really know, consumers are at the mercy of the stories told by actors like the Meat Information Office. As we have suggested, however, these stories show little regard for fact – not because they take any pleasure in lies, but because promoting meat, rather than finding and presenting facts about meat, is their purpose.

This goes to show that the meatification process, which is seen by most as a function of changing economic structures coupled with increased technological capacity, relies strongly on having a particular sort of consumer at the receiving end. Specifically, it relies on a consumer who has been conditioned to look away. This is precisely the sort of consumer the Meat Information Office has sought to create with its propaganda.

Matti O. Hannikainen

10 Classifying Finnish fish

Introduction

The relationship between the Finnish people and fish has changed drastically during the last century. With the advent of the twentieth century, textbooks about Finnish fauna published in Finnish indicated that almost every species of fish caught was edible. As the society prospered and urbanised, Finns began to prefer certain species while disregarding others so that numerous fish species were perceived commercially less valuable or even worthless. In Finnish language these species have been called *roskakala* – literally "trash fish" – which I employ in this chapter instead of the more common concept rough fish (Figure 10.1). The concept of "trash fish" has been complex and elective. A recent book *Suomen Kalat (Fish in Finland)* listed 71 species spawning in Finland, of which 20 species were ranked as either commercially undervalued or under-used. These included species like silver bream (*Blicca bjoerkna)* and three-spiked spickleneck (*Gasterosteus aculeatus*), both of which have been considered trash fish *par excellence* for decades, whereas few species like bream (*Abramis brama*) and pike (*Esox lucius*) had been highly appreciated until recently.[1] The depreciation of these previously valued species indicates a change in demand and in consumption of fish in Finnish society during the past decades. Finns continue to appreciate certain species, most notably the family *Salmonidae*, including Atlantic salmon (*Salmo salar*), trout (*Salmo trutta*) and whitefish (*Coregonus lavaretus*), their value underlined by conceptualising them as "noble stock."[2]

In this chapter, I will explore how the concept of trash fish which refers to species with little or no value for human consumption was invented in the context of Finland and how it has affected the consumption of fish in Finnish society. In addition, I shall analyse societal changes that have affected consumption and thus the value of different species. By analysing the role of the history of the concept of trash fish, which has been instrumental in defining the human relationship with fish, I will scrutinise a scientific discourse that aimed at modernising fishing into a

1 Sakke Yrjölä, Hannu Lehtonen and Kai Nyberg, *Suomen kalat* (Helsinki: Nemo, 2016), 262–267; for bream and pike, see, e.g., Hannu Lehtonen, *Iso kalakirja ahvenesta vimpaan* (Helsinki: WSOY, 2003), 67, 150.

2 Liisa Kaski, *Myyttiset eläimet – tarua ja totta eläinten mahdista*, Kirjokansi 182 (Helsinki: Suomalaisen Kirjallisuuden seura, 2019).

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Figure 10.1: Waste container for "trash fish" (in Finnish, *roskakala*) in ice fishing competition at Hankavesi lake in Ähtäri, Finland in 1988. Photo by Hannu Lindroos. Finnish Heritage Agency. https://finna.fi/Record/museovirasto.BBF61F49DABBFE6869AD8CD3D57322B1. CC BY-NC-ND 4.0.

commercially viable industry by promoting the classification of fish species according to their commercial value. This discourse was influential from its advent in the late 1880s until the 1970s at least.[3] By concentrating on the scientific discourse, I will explore how the discourse advocated the classification of fish species from different perspectives and how the classification itself has changed.

In analysing the scientific discourse, I have studied official documents, such as the published reports of parliamentary committees appointed to examine fishing legislation and issues related to fishing, as well as textbooks published about Finnish fauna and fishing. The value of the committee reports lies with their detailed analysis, which provides us with an invaluable contemporary insight into fishing. The fishing manuals and textbooks were based on the latest research. They aimed at developing fishing as an industry by disseminating the latest scientific knowledge to the professionals and to the public. More importantly, most

3 For a more detailed discussion on the culinary discourse, see Matti O. Hannikainen, "Roskaa vai ruokaa? Keittokirjojen kalat 1900-luvulla," in *Ympäristömuutos ja estetiikka* ed. by Jukka Mikkonen, Sanna Lehtinen, Kaisa Kortekallio and Noora-Helena Korpelainen (Helsinki: Suomen Estetiikan Seura, 2022), https://helda.helsinki.fi/handle/10138/343564.

textbooks published between the 1890s and the 1990s included a list of fish species allowing me to compare, how their characteristics, and subsequent classification, have changed. In addition, I have analysed articles on fishing and fish consumption, which were published in professional journals, most notably *Suomen Kalastuslehti*. By cross-reading official committee reports, textbooks and journal articles on fishing, I explore how the scientific discourse classified fish species, and why.

Fish in Finnish environmental history

Fishing is the most ancient way for gathering food that remains important globally.[4] Environmental historians have focused often on the transformation of fishing into an industrial activity that has depleted the stocks of the most valuable species, such as Atlantic salmon, herring (*Culpea harengus*), cod (*Gadus morhua*) and tuna (*Thynnus thynnus*). Environmental historians have paid therefore only scarce attention to the abundant albeit economically "less profitable fish" not to mention worthless trash fish.[5] For example, out of 20,000 saltwater fish species fewer than 50 are commercially valuable.[6] The bias concerning the history of fishing has been acknowledged by food historians, who have analysed changes in the demand and the consumption of fish. For instance, in England, various fish species were consumed in huge quantities prior to the mid-nineteenth century, when the people begun to "avoid all but a few species and methods of preparation".[7]

4 Brian Fagan, *Fishing – How the Sea Fed Civilization* (New Haven and London: Yale University Press, 2018).

5 See, e.g., Paul Greenberg, *Four Fish – the Future of the Last Wild Food* (New York: Penguin Books, 2010); Fagan 2018; Margaret Beattie Bogue, *Fishing the Great Lakes: An Environmental History, 1783–1933* (Madison, Wis.: University of Wisconsin Press, 2000); Ingvar Svanberg and Alison Locke, "Ethnoichthyology of Freshwater Fish in Europe: A Review of Vanishing Traditional Fisheries and Their Cultural Significance in Changing Landscapes from the Later Medieval Period with a Focus on Northern Europe," *Journal of Ethnobiology and Ethnomedicine* 16:68, doi: 10.1186/s13002-020-00410-3. Maguelonne Toussant-Samat, *A History of Food*, New expanded edition [orig. 1987], (trans. by Anthea Bell), (Chichester: John Wiley & Sons., 2009), 284–285; Kirsi Sonck-Rautio, "The Baltic Herring as Agents in the Socio-Ecological System in Rymättylä Fisheries" in *Shared Lives of Humans and Animals – Animal Agency in the Global North*, ed. by Tuomas Räsänen and Taina Syrjämaa (London and New York: Routledge, 2017).

6 Toussant-Samat, *A History of Food*, 284–285.

7 Paul Freedman, "Introduction – A New History of Cuisine", in *Food – The History of Taste* ed. Paul Freedman (Berkeley & Los Angeles, CA.: University of California Press, 2007), 8.

In Finnish food histories, fish is taken for granted almost without much consideration concerning changes in their value or consumption.[8] Hence, there is surprisingly little discussion on nominating cured herring as the favourite Finnish fish despite being imported. It is moreover one of the few species of fish that remains consumed cured (salted) although its processing has improved from a completely salted to a semi-preserved product.[9] Fish remained inseparable part of Finnish diet with strong regional variations defining consumption and the value of different fish species. The annual catch grew from some 14 million kilos to some 156 million kilos during the twentieth century.[10] Yet subsistence fishing remained important in Finland until the 1950s. Thus, fishing and the consumption of fish in Finnish society in the late nineteenth century differed from those in the UK and in Germany, where fishing had been industrialised and where commercial cooking and eating out characterised the consumption of fish.[11] Therefore, this chapter aims to combine environmental history and cultural history of fish by analysing perceptions concerning the value of fish in a modernising Nordic country.[12]

Despite the recent animal turn in environmental humanities and in environmental history, fish continues to represent an unfamiliar animal living in a different environment without much in common with humans.[13] Admittedly, no fish species has been domesticated; therefore, humans have not been able to observe its habits and emotions. In Finnish culture, for instance, the otherness of fish is captured in

8 Merja Sillanpää, *Happamasta makeaan – suomalaisen ruoka- ja tapakulttuurin kehitys* (Jyväskylä: Gummerus 1999); Maarit Knuuttila, *Kansanomaisen keittämisen taito* (Helsinki: Suomen muinaismuistoyhdistys 2006); Ritva Kylli, *Suomen ruokahistoria — suolalihasta sushiin* (Helsinki: Gaudeamus 2021).

9 Kylli, *Suomen ruokahistoria*, 162, 466.

10 Suomen tilastollinen vuosikirja 1903, https://www.doria.fi/bitstream/handle/10024/67177/stv_1903.pdf?sequence=1&isAllowed=y, accessed May 13, 2021; Luonnonvarakeskus, Tilastotietokanta, Suomen kalastuksen saaliit (1000 kg) 1980–http://statdb.luke.fi/PXWeb/pxweb/fi/LUKE/LUKE__06%20Kala%20ja%20riista__02%20Rakenne%20ja%20tuotanto__08%20Kalastus%20yhteensa/03_Kokonaiskalansaalis.px/, accessed June 6, 2021.

11 John K. Walton, *Fish and Chips and the British Working Class 1870–1940* (London and New York, 2000 [1992]).

12 See, e.g., Nicolaas Miink, "Forum – It Begins in the Belly," *Environmental History* 14:2 (2009): 312–322.

13 R. C. Hoffmann, "Carps, Cods, Connections – New Fisheries in the Medieval European Economy and Environment", in *Animals in Human History – The Mirror of Nature and Culture*, ed. by M. J. Henniger-Voss (Rochester, NY.: University of Rochester Press, 2002); Dorothee Brantz, "Introduction," in *Beastly Natures – Animals, Humans and the Study of History*, ed. by Dorothee Brantz (Charlottesville and London: University of Virginia Press, 2010).

numerous proverbs, most notably "like a fish on dry land."[14] Moreover, the human relationship with fish represents the most one-sided and irreversible human–animal encounter, because most fish caught, whether wild or farmed, will be consumed.[15] This chapter contributes to the ongoing discussion on the animal turn in environmental history first by moving beyond mammals, and second, by examining the relationship between human and fish in a modern urbanising society that has attracted only little scholarly attention so far.

New scientific concept

The reason for classifying fish species originated from the modernisation of agriculture in Finnish society in the mid-nineteenth century. The famine that ravaged country in the late 1860s may have intensified the pressure to modernise fishing.[16] The Finnish Senate had appointed Inspector of Fishing in 1861, but the agrarian character of the society in addition to the importance of subsistence fishing played a significant role in slow modernisation. The new discourse on fishing was formulated only in the late 1880s; Oscar Nordqvist, who was appointed the Inspector of Fishing in 1889, was the key person in initiating it. Following a seven-week study tour in the autumn of 1890 to fisheries in Germany, England, Scotland and Sweden, Nordqvist realised that fishing methods in Finnish society, that was Grand Duchy in the Russian Empire, were outdated and inefficient. In Prussia, for instance, the fisheries of those lakes that were professionally managed yielded between 16 and 45 kilos of fish per hectare annually, not to mention carp ponds that yielded nearly 80 kilos, whereas Finnish lakes yielded only some five kilos per hectare.[17] The tour had a profound impact on Nordqvist who began to promote the transformation of subsistence fishing into a commercial industry with modern equip-

14 See, e.g., Kaisa Häkkinen, "Eläin suomen kielessä" in *Eläin ihmisen mielenmaisemassa*, ed. by Heini Ilomäki and Outi Lauhankangas, (Helsinki: Suomalaisen Kirjallisuuden Seura, 2002), 47–55; Pekka Hakamies, "Ruisleipä ja muut ruokasymbolit," in *Suulla ja kielellä – tulkintoja ruoasta*, ed. by Maarit Knuuttila, Jyrki Pöysä and Tuija Saarinen (Helsinki: Suomalaisen Kirjallisuuden Seura, 2004).

15 A. N. H. Creager and W. C. Jordan, "Introduction," in *The Animal/Human Boundary – Historical Perspectives*, ed. by A. N. H. Creager and W. C. Jordan (Rochester, NY: University of Rochester Press, 2002); Hoffmann "Carps, Cods, Connections."

16 See, e.g., Ann-Marin Östman – Mekanisoinnin ensimmäinen aalto, in *Suomen maatalouden historia 2 – kasvun ja kriisien aika 1870-luvulta 1950-luvulle*, ed. by Matti Peltonen (Helsinki: Suomalaisen kirjallisuuden seura 2004), 19–76.

17 Oscar Nordqvist, *Ehdotuksia toimenpiteisiin kalastuksen kohottamiseksi,* Suomen kalastuksen Tarkastajan tiedonantoja II, (Helsinki, 1891); Gunnar Gottberg, *Kalastustutkimuksia Skandinaaviassa, Saksassa ja Itämeren maakunnissa* (Helsinki, 1913).

ment and processing facilities. More importantly, new discourse sought to classify all fish species according to their commercial value. Nordqvist and Gunnar Gottberg, who worked as the assistant adviser to the Board of Agriculture, suggested the extermination of all worthless species i.e., trash fish, such as three-spiked stickleback and silver bream to preserve nutrition for more valuable species. In contrast, roach, bleak and perch were ranked either valuable or worthless depending on the local conditions underlining the electiveness of the concept.[18]

The new discourse on fishing coincided with changing the paradigm defining human–animal relationship in Finland. The new paradigm classified all wild animals (mammals, birds and fish) according to their value from a human perspective, thus advocating complete human mastery over nature.[19] New scientific discourse on fishing promoted complete human control over fish stripping all agency away from fish. The fact that the new scientific discourse followed commercial logic separated it from the other human-animal discourses in the turn-of-the-century making it controversial and complex. No fish threatened human or farm animals in contrast to carnivores like brown bear (*Ursus arctos*) and wolf (*Canis lupus*). Nor did any fish species damage crops and plantations unlike numerous species of birds.[20] In contrast, fish were only harmful to other species of fish either by competing over the same food or by feeding on other fish. Further underlining the human dominance over fish, the hunting of various fish-eating animals, such as otter (*Lutra lutra*), black-throated diver (*Gavia arctica*), grey seal (*Halichoerus grypus*) and even Saimaa ringed seal (*Pusa hispida saimensis*), was encouraged by Suomen Kalastusyhdistys (Finnish Fisheries Association, 1891–1978), a policy that lasted from the late 1880s until the mid-1920s.[21]

Within a few years, however, the new discourse began to affect manuals and textbooks on fish and fishing. In 1893, one textbook argued that despite numerous lakes and streams, the annual catch was disproportionately small, which was why the rationalisation of fishing as well as rational management of fisheries was highly recommended.[22] Two years later, another book on improving fishing classified 27

18 Gottberg, *Kalastustutkimuksia Skandinaaviassa*, 47–49.

19 Pirjo Ilvesviita, *Paaluraudoista kotkansuojeluun – suomalainen metsästyspolitiikka 1865–1993*, (Rovaniemi: University of Lapland, 1995).

20 Timo Vuorisalo and Markku Oksanen, "'Mikä on toiselle hyödyksi, voi usein olla toiselle vahingoksi' – pohdintoja eläinluokittelusta," in *Kanssakulkijat – monilajisten kohtaamisten jäljillä*, ed. by Tuomas Räsänen and Noora Schuurman (Helsinki: Suomalaisen Kirjallisuuden Seura, 2021).

21 T. H. Järvi, *Suomen Kalastusyhdistys 1891–1941* (Helsinki, 1941); Vuorisalo and Oksanen, "'Mikä on toiselle hyödyksi.'"

22 O. M. Reuter, *Suomen kalat ja kalastus Suomessa*, translated by Wihtori Peltonen, (Porvoo: Werner Söderström, 1893).

fish species edible, although a few, like bleak and ruffe (*Gymnocephalus cernua*), were considered too small for commercial fishing. Only burbot (*Lota lota*) was classified as harmful species given its reputation as roe-eater. In addition, the book provided cooking instructions for each species making it a rare example combining scientific and culinary discourses.[23] A few years later Oscar Nordqvist published a textbook classifying all fish species found in Finland according to their commercial value based on their taste. Moreover, Nordqvist continued to advocate the extermination of trash fish such as many species the family *Cyprinidae*, that were perceived to compete over food with the more valuable species. About silver bream, Nordqvist wrote that its "meat is loose, thin and very bony, which is the reason, why it must be considered trash among the fish and must be, if possible, exterminated and replaced with the bream."[24]

The impact of the new discourse on describing fish species was captured in two editions of *Suomen selkärankaiset*, a textbook on the Finnish vertebrates. In the first edition published in 1882, all fish were classified edible, although both silver bream and blue bream (*Ballerus ballerus*) were listed as less valuable species.[25] The second edition was completely rewritten according to new scientific discourse with all 65 fish species found in the Grand Duchy classified into commercially valuable, regionally valuable and worthless. Unsurprisingly, the most valued species were Atlantic salmon, trout and whitefish followed by Baltic herring, sprat (*Sprattus sprattus)* and pike-perch (*Sander lucioperca*). Numerous species, like pike, bream, ide and roach, were considered regionally valuable, whereas a few species, such as blue bream, silver bream and rudd, were characterised tasteless, thus worthless.[26] Subsequently, the fisheries of numerous individual lakes and rivers were also classified.[27] The textbooks and articles began to spread the new classification of fish species into professional as well as public consciousness.

The complexity of the concept trash fish was illustrated in valuing roach and pike. In the late medieval and early modern periods, pike had been one of the most valued fish, because it could be cured without salt by drying, which was why it had

23 C. Cederström, *Neuvoja kalastuksen hoidossa pienempien kalavesien omistajille ja kalastajille.* (Helsinki: Suomen kalastusyhdistys, 1895).

24 Oscar Nordqvist, *Kalastustaloudellinen käsikirja*, translated by K. V. Puuska, Kalastajain ja metsästäjäin kirjasto 1 (Helsinki, 1902).

25 A. J. Mela. *Suomen luurankoiset: eli luonnontieteellisen Suomen luurankois-eläimistö* (Helsinki: K. E. Holm, 1882), http://hdl.handle.net/10138/16015, accessed May 26, 2022.

26 A. E. J. Mela and K. E. Kivirikko, *Suomen luurankoiset* (Porvoo: Werner Söderström, 1909).

27 Elis Karhusaari, Kalastosta ja kalastuksesta Kivijärvessä ja sen ympäristössä, in *Suomen kalastuslehti* 11–12 (1909): 259–264; Viljo Jääskeläinen, "Huomioita Kemijoen kalastosta, 203," in *Suomen kalatalous – nide 2*, ed. by T. H. Järvi (Helsinki: Suomen kalastusyhdistys 1913).

been exported to Central Europe.[28] Yet due to its reputation as a ruthless predator, it had been outlawed during the nineteenth century. According to the fishing legislation enacted in 1902, anyone releasing a pike into an alien lake or stream could be fined up to 200 Finnish marks.[29] Nevertheless, it was valued because it could be easily caught throughout the year.

The perception concerning the value of pike changed during the first decades of the twentieth century. In 1911, the controller of Finnish fishing Toivo Henrik (T. H.) Järvi, argued that the regulation of fishing was necessary to preserve the stocks of the most valuable species. Järvi argued moreover that supporting the spawning of pike would improve local fisheries and fishers' income.[30] Similarly, Oscar Nordqvist and Gunnar Gottberg, who encouraged more extensive aquaculture, promoted the hatching of pike to support their stock and to allow fishers to respond changes in its growing demand.[31] In 1930, M. Myrberg argued that common native species, such as pike, perch and roach, should be farmed more extensively, because they required less-specific conditions in contrast with the more valuable species, like Atlantic salmon and whitefish, providing more stable income.[32] According to the new scientific discourse, pike was valuable, because it fed on the less valuable species, such as roach, rudd, and bleak, transforming them into a valuable commodity.[33] The new discourse thus contributed to the transformation of the reputation of pike from a ruthless predator into a commercially valuable species.

Moulding the discourse

After Finland gained its independence in December 1917, fishing encountered numerous difficulties. The lucrative trade to St. Petersburg ended leaving fishing communities in south-eastern Finland looking for new markets without success

28 Asko Vilkuna, *Kalannimistä kulttuuritutkimuksen lähteenä*, 4–5, Suomi 111: 2 (Helsinki: Suomalaisen Kirjallisuuden Seura, 1965).

29 *Kalastuskomitean mietintö*, 8–9, 45. Komiteamietintö 9. (Helsinki: Valtioneuvoston kirjapaino, 1933).

30 T. H. Järvi, "Kalaveden hoidosta rannikollamme," *Metsästys ja kalastus* 11–12 (1911): 205–213.

31 Oscar Nordqvist, Kalastuksen hoito – opas käytännölliseen kalatalouteen mukaillen ja Suomen oloihin sovitellen, trans. Eero Hellevaara (Helsinki: Suomen kalastusyhdistys, 1915).

32 M. Myrberg, "Onko tarpeellista viljellä n. s. vähäarvoisia lajeja?," *Suomen Kalastuslehti* 3 (1931): 13; the full text published later; M. Myrberg, "Vähäarvoisten kalojen viljelystä," *Suomen Kalastuslehti* 4 (1931): 94–97.

33 Gunnar Gottberg, *Haukikannan lisääminen – käytännöllisiä ohjeita.* (Helsinki, Maataloushallitus, kalatalousosasto, 1925), 3.

during the interwar years. Following the principles of the scientific discourse on fishing, authorities launched an unsuccessful campaign in the mid-1920s to increase the consumption of Baltic herring instead of imported herring.[34] More importantly, the scientific discourse on trash fish continued in the 1920s when some of the most threatening writings were published. These were fuelled by growing concern over the sustainability of the most valuable species, most notably Atlantic salmon. The limnologist Heikki Järnefelt, who later served as a professor at the University of Helsinki, was one of the most active advocates of scientifically oriented commercial fishing. In May 1920, Järnefelt gave a lecture about classifying fish for local fishers at Perttula (Savo), in which Järnefelt argued that trash fish, such as roach, rudd, ruffe and silver bream, should be exterminated.[35] Three years later, Järnefelt wrote in *Turun Sanomat*, one of the leading Finnish newspapers, that "we should wage a ruthless war aiming to remorselessly exterminate all those fish we cannot use commercially." Järnefelt ended the article with the sinister words "above all, annihilate trash fish!"[36]

There were attempts to introduce a simpler, albeit more severe, two-tier classification. For instance, the Secretary for fishing at the Board of Agriculture Eero Hellevaara suggested in 1923 that all fish species should be classified as either commercially valuable species or trash fish. The latter category would have comprised only ruffe, sprat, all species of spicklenecks and stone loach (*Barbatula barbatula*).[37] Most textbooks however continued to employ the three-tier classification. In 1932, T. H. Järvi classified all fish species of the Baltic Sea into three categories: 17 species were commercially valuable, 15 were less valuable or only locally valuable and 15 species were worthless. Most worthless species were either bottom feeders or pelagic species, both of which were difficult to catch compared with those species feeding and spawning closer to the shore.[38] Similarly, Professor Kaarlo Johannes Valle classified each fish species found in Finland according to the structure and taste of their meat in his seminal book *Suomen kalat* (Finnish fish). Valle characterised silver bream small and bony, its meat dry and loose; therefore, it was worthless and "should be annihilated." Highlighting the complexity of the concept, Professor Valle wrote that roach was a less valuable species given its numerous fish bones and small size. It was valued as cured "only there, where there was no more valu-

34 See, e.g., Olli Pitkänen, "Mahdollisuudet silakan kulutuksen parantamiseksi," *Suomen Kalastuslehti* 1 (1924): 14–16; "Tiedonantoja ja uutisia – Propagandatyö silakan käytön laajentamiseksi kotimaassamme," *Suomen Kalastuslehti* 3 (1924): 96.

35 Anon., "Kalastuskurssit Konnevedellä," *Savon Sanomat*, May 4, 1922, 2.

36 Heikki Järnefelt, "Pari sanaa kalastusoloistamme," *Turun Sanomat*, June 29, 1923, 3.

37 Hellevaara 1923.

38 Järvi 1932, 22–25.

able fish available."[39] Valle's book was revised into a guidebook to recreational anglers in 1941 marking one of the first cases in Finland, when the scientific discourse on fish was disseminated directly into the recreational discourse.[40]

New legislation on nature conservation was enacted in 1923, but it affected more human-animal discourses on hunting than that concerning fishing.[41] In order to continue to disseminate the key ideas of the scientific discourse on fishing, the Finnish Fisheries Association began to employ soft power, such as education. It organised annual symposia on contemporary themes about fishing and published manuals endorsing more varied consumption of less-valuable species.[42] The scientific discourse on fish continued therefore to follow the commercial imperative with a little emphasis paid on new legislation on nature conservation.

The scientific discourse also influenced fishing legislation. The current legislation dated from 1902, but it had been modified in 1924, when the so-called fishing crofts in the coastal areas had been granted fishing rights. It was considered necessary to update legislation in accordance with the scientific discourse on fishing. The previous committees had endorsed rationalisation of fishing in 1898 and 1911 respectively, but the Senate had not approved any restrictions on private fishing rights that were essential part of landownership. In 1933, a new committee was appointed to review fishing legislation. It underlined the fundamental paradox concerning fishing; on one hand, the annual catch ought to increase, because the population of Finland was growing and, on the other hand, remaining stocks ought to be safeguarded against overfishing. Embracing scientific discourse on fishing, the committee endorsed commercial fishing over subsistence fishing arguing that a similar modernisation, which had proved successful with agriculture and forestry, should be conducted with fisheries. However, the committee acknowledged difficulties concerning private fishing rights, which was why its suggestions were not realised.[43]

Consumption as well as the value of fish changed during the 1920s and 1930s, when the demand and the supply began to concentrate on the commercially valuable species. There were complaints in contemporary journals that Finns preferred fresh fish instead of old-fashioned cured (i.e., salted) fish, most notably Baltic her-

39 Kaarlo Johannes Valle, *Suomen kalat* (Helsinki: Otava, 1934).

40 Kaarlo Johannes Valle, *Kalakirja: Retkeilykäsikirja ja määräysopas kalamiehille* (Helsinki: Otava, 1941).

41 See, e.g., Mari Pohja-Mykrä and Sakari Mykrä, "Luonnonvaraiset eläimet sodassa ja sodan kohteina," in *Sodan ekologia – sodankäynnin ympäristöhistoriaa,* ed. by Simo Laakkonen and Timo Vuorisalo (Helsinki: Suomalaisen kirjallisuuden seura, 2007), 182–183.

42 See, e.g., Hannikainen, "Roskaa vai ruokaa?".

43 *Kalastuskomitean mietintö*.

ring, indicating a drastic change in the diet.[44] As a result, some species, like roach, suffered from diminishing consumption. Paradoxically, this change became apparent during the Second World War (1939–1945) when many of the less valued species, such as roach and blue bream, enjoyed a brief consumption peak given the food rationing and problems in maritime fishing. The authors of a war-time cookbook were astonished that many Finns did not even value cod despite its availability.[45] As soon as the fishing returned to normal conditions in the late 1940s, the consumption of these less valuable species fell to their pre-war level, continuing to decline in the following decades.[46] Given the food scarcity and the limited availability of fish, the Finnish government had deregulated fishing from 1941 until 1948 with a few exceptions in most cases concerning Atlantic salmon.[47] Some politicians and the leading experts on fishing were concerned, however, that unregulated fishing would deplete the stocks of the most valuable species. These fears increased the pressure for new legislation on fishing in the late 1940s, which was enacted finally in 1951.[48]

Redefining the paradigm

The 1950s was a transition period, when Finland urbanised and modernised rapidly. In new urban homes, novelties like electric kitchenware, including stoves, refrigerators and freezers, proliferated.[49] As a result of this transformation, salting lost its importance marking one of the greatest changes in Finnish food history. In addition to the constantly growing demand for fresh fish, the imports of frozen fish mainly

44 Yrjö Wuorentaus, "Kalaa nyt kysytään ja tarvitaan," *Suomen kalastuslehti* 3 (1941): 33–36; see also Helmi Liimatainen, "Säilökää kalaa," *Emäntä-lehti* 6 (1941): 148–149.

45 Kerttu Olsonen, "Mikä on paras kala?," *Kotieliesi* 10 (1940): 260–261; Aarne Nissinen and Eva Somersalo, *Kortiton ruoka ja miten käytän ruoka-annokseni*, 2. laajennettu painos (Porvoo: WSOY [1942] 1943).

46 Hanna Pukkila, *Sattumasoppaa – pulavuosien parhaat palat* (Helsinki: Tammi 2008).

47 Jouni Kallioniemi, *123 sotavuosien ruokaohjetta* (Jyväskylä: Gummerus, 2013), 10–11.

48 Kalataloudellinen toimikunta, *Kalataloudellisen toimikunnan mietintö kevätsilakan kalastuksen ja kaupan järjestämisestä*, Komiteamietintö 18 (Helsinki: 1951). The committee reports (komiteamietintö) were published by the parliament, if not stated otherwise. see also Ari Lappalainen, "Kalastuskulttuuri muuttuvassa yhteiskunnassa," in *Kalaveteen piirretty viiva – kalastus ja kalastaja yhteiskunnallisten muutosten pyörteissä*, ed. by Lasse Hyytinen and Heikki Kupiainen (Helsinki: Helsingin yliopisto, 1995), 66–69.

49 Maarit Knuuttila, "Kun äiti jääkaapin osti," in *Onnen aika – valoja ja varjoja 1950-luvulla*, ed. by Kirsi-Maria Hytönen and Keijo Rantanen (Jyväskylä: Atena 2013), 173–181.

from Norway grew from 0.8 to 6.8 million kilos between 1958 and 1973.[50] Unsurprisingly, less valuable native fish species, that were previously cured, were gradually replaced by imported fillets. Paradoxically, the Food and Agriculture Organization of the United Nations (FAO) had reported in the early 1950s, that Finland was self-sufficient concerning the supply of fish.[51] The construction of hydroelectric power plants in numerous rivers and the increasing pollution level in rivers and lakes, however, devastated the stock of many anadromous species, most notably those of Atlantic salmon, Lake salmon (*Salmo salar m. Sebago*) and trout.

These changes prompted the parliament to set up numerous committees to investigate fishing in the 1950s and 1960s. In 1951, a committee investigating the fishing of Baltic herring during the spring season aiming to increase its consumption underlined the undervalued role, which trash fish, such as roach, rudd, blue bream and silver bream, could play as food indicating the impact of war-time experiences.[52] Yet the initiative was fruitless, because the next committee, which analysed freshwater fishing in 1953, encouraged the extermination of trash fish in order to support the depleting stocks of the commercially valuable freshwater species, such as vendace, whitefish, pike-perch, bream and pike. According to the scientific discourse on fishing, exterminating trash fish would improve the fisheries' productivity and fishers' income.[53] The committee report thus exemplified the influence, which the scientific discourse on fishing exercised in the 1950s.

The depletion of the anadromous species forced a change in the scientific discourse on fishing. In 1967, a committee assessing the condition of fishing in Finland noted, that many commercially valuable species, such as Atlantic salmon, trout, whitefish and lamprey (*Lampetra fluviatilis*), were disappearing. In contrast, the number of the less valuable species was growing leading the committee to propose a new classification that would divide fish species into either commercially valuable species or less valuable species. The committee thus suggested scrapping the concept trash fish nominally, because it continued to characterise all less valuable species as unsuitable for human food.[54] Admittedly, environmentalism that spread across the nation in the 1960s, had only a minimal influence on the scientific discourse on fish-

50 Kalan markkinointitoimikunta, *Kalan markkinointitoimikunnan mietintö*, Komiteamietintö 146 (Helsinki 1974), 144.

51 *Selostus v. 1951 tapahtuneesta kehityksestä maatalouden, metsätalouden, kalastuksen, ravitsemuksen ja kotitalouden aloilla* (Helsinki, Suomen FAO-toimikunta, 1952).

52 Kalataloudellinen toimikunta, *Komiteamietintö kevätsilakan kalastuksesta.*

53 Järvikalastuskomitea, *Järvikalastuskomitean osamietintö vuodelta 1953 ja sen täydennysosa vuodelta 1958: (osamietinnöt I ja II)*, Komiteamietintö 11 (Helsinki 1958).

54 Muuttuvien vesistöjen kalatalouden hoitotoimikunta, *Muuttuvien vesistöjen kalatalouden hoitotoimikunnan mietintö*, Komiteamietintö B73 (Helsinki 1967), 1–3.

ing despite the fact that pollution and new hydroelectric dams endangered some fish species, most notably asp *(Leuciscus aspius)*.[55]

Given the modernisation of fishing techniques and equipment, the overall catch grew from some 60 million kilos over 123 million kilos between 1950 and 1980.[56] Admittedly, most of the increase was based on the more intensive fishing of Baltic herring, most of which were used to feed the growing number of farmed fur animals and to farmed fish. The depletion of Atlantic salmon and lake salmon was the main reason for a surge in farming of rainbow trout (*Oncorhynchus mykiss*) that began in the 1960s (Figure 10.2). Trialled unsuccessfully in the late nineteenth century, new fish farms turned into the profitable business during the 1970s.[57] By the mid-1980s, there were 453 fish farms in Finland, of which 151 operated sea pools in the Baltic Sea compared with 302 facilities located inland, by which time the rainbow trout production had reached 5.4 million kilos.[58] Rainbow trout provided a staple yield and it was sold at an affordable price processed into ready-cut fillets explaining its demand. It has been argued that rainbow trout "revolutionised Finnish fisheries."[59] The successful farming of rainbow trout has marked one of the most significant changes in food history as well as in environmental history of fish in Finnish society.

Given the changes in supply as well as the constantly growing demand for both imported and farmed fish, the scientific discourse on fishing that had classified fish species in accordance with their commercial value once again changed in the 1970s. Despite the increasing annual catch, Finns consumed less fish than meat, although the consumption of fish in Finland exceeded that of most industrialised countries.[60] In 1973, for example, the annual consumption of meat was over 50 kilos in contrast to fish consumption, which was only some 19 kilos per person.[61] In 1974, a committee exploring ways to improve the marketing of fish noted that fish-

55 Lehtonen, *Iso kalakirja*, 138.

56 Kalan markkinointitoimikunta, *Kalan markkinointitoimikunnan mietintö*, 72; Luonnonvarakeskus, Tilastotietokanta, Suomen kalastuksen saaliit (1000 kg) 1980–, http://statdb.luke.fi/PXWeb/pxweb/fi/LUKE/LUKE__06%20Kala%20ja%20riista__02%20Rakenne%20ja%20tuotanto__08%20Kalastus%20yhteensa/03_Kokonaiskalansaalis.px/, accessed June 30, 2021.

57 Järvi, *Suomen Kalastusyhdistys 1891–1941*; Kauno Peltoniemi, *Taistelu kirjolohesta – muistelmia uuden elinkeinon, kalanviljelyn, alkutaipaleelta Suomessa* (Helsinki: Suomen lohenkasvattajain liitto, 1984); Anni Laitinen ed., *Suomessa kasvanut kala* (Helsinki: Suomen kalankasvatusliitto, 2014). For farmed fish, see also the chapter by Otto Latva in the present volume.

58 Kalateollisuustoimikunta, *Kalateollisuustoimikunnan mietintö*, Komiteamietintö 54 (Helsinki 1985).

59 Lehtonen, *Iso kalakirja*, 82–85: Peltoniemi, *Taistelu kirjolohesta.*

60 Kalan markkinointitoimikunta, *Kalan markkinointitoimikunnan mietintö*.

61 Riitta Suomalainen, Marja Viita, Hilkka Virtanen and Hilkka Uusivirta (eds.), *Keittotieto – keitot ja kalaruoat sekä Suomen keittoja ja kalaruokia* (Tout à vous – la Cuisine de A à Z (1968), translated by Sirkka Jäntti, Sinikka Kurikka, and Riitta Suomalainen), XV (Helsinki: WSOY, 1974).

Figure 10.2: The drying of Kuikkala pond in order to kill the trash fish before replacing them with more valuable fish, most likely rainbow trout, in 1962. Photo by Seppo Hurme. The Hunting Museum of Finland. https://finna.fi/Record/metsastysmuseo.knp-212287. CC BY-NC-ND 4.0.

ing and the consumption of fish were becoming more selective. Underlining the impact of selective demand on commercial fisheries, the committee argued that there were only six commercially valuable species in Finnish waters: Baltic herring, vendace, Atlantic salmon and trout, whitefish, pike and perch. The committee was worried that increasing selectiveness focused on the most commercially valuable species, i.e., Atlantic salmon, whose stocks were in decline. In contrast, the committee reported that the stocks of many less valuable species were soaring.[62]

In 1976, a new committee, which reassessed freshwater fishing, published its report that was a watershed in the scientific discourse on fishing. The committee employed a new two-tier classification without trash fish. All species were classified as either valuable species or less valuable species. In contrast to exterminating worthless species, the revised scientific discourse on fishing aimed at increasing the catch and the consumption of the less valuable species acknowledging the fact

62 Kalan markkinointitoimikunta, *Kalan markkinointitoimikunnan mietintö*.

that the stocks of most valuable species had reached their sustainable limit.[63] The committee moreover noted that the problems, which continued to hamper the modernisation of fishing, were essentially the same as they had been in the 1880s: poor organisation of fishing often based on a single boat coupled with low investment in processing the catch, followed by poor logistics connecting fishing communities to urban centres, where there was selective consumer demand.[64]

Despite replacing the concept trash fish with less valuable fish in the mid-1970s, the first and only cases of exterminating worthless fish species had taken place in the previous decade. The initiative had originated from the need to create ponds for farming rainbow trout, which required poisoning all other fish species from the ponds earmarked for a fish farm (Figure 10.2).[65] While the need to clear natural ponds for fish farms followed commercial logic, another policy that caused the removal of less valuable species was based on ecological research. Numerous lakes suffered from oxygen deficiency due to increasing fertiliser run-off from surrounding fields in addition to industrial pollution. The solution for improving their condition was to remove less valuable fish species, such as roach, rudd, silver bream and smelt. Hence, zooplankton could multiply and eat more algae and thus decrease the inflorescence causing the eutrophication of these lakes.[66] These mass removals continued into the early 2010s.[67] Paradoxically, the new environmentally oriented policy transformed these less valuable fish species into scapegoats for human activity.

Underlining the conceptual change of the revised scientific discourse on fishing, the textbooks on fishing published after the 1970s rarely employed the concept of trash fish. For instance, a textbook titled *Suomen Eläimet 3 (Finnish Fauna 3)*, that dealt with fish and reptiles, employed the concept of less valuable species to classify fish species like roach and silver bream despite arguing that these species were becoming too numerous.[68] Likewise, Lauri Koli, a biologist who published *Otavan kalakirja (Otava's Fishbook)*, employed the concept of less valuable species instead of trash fish.[69] As a textbook example of the conceptual change, professor Hannu Leh-

63 Sisävesikalastustoimikunta, *Sisävesikalastustoimikunnan mietintö*, Komiteamietintö 35 (Helsinki 1976), 44–56. 1976).

64 Kalan markkinointitoimikunta, *Kalan markkinointitoimikunnan mietintö*.

65 Lauri Koli, *Suomen kalat* (Helsinki: WSOY 1990), 91–92; Lehtonen, *Iso kalakirja*, 85.

66 Lauri Koli, *Otavan kalakirja* (Helsinki: Otava 2001 [1997].

67 Timo Mäkinen (ed.), *Voidaanko kalastuksella vähentää kalankasvatuksen ravinnekuormaa? Kalankasvatuksen nettokuormitusjärjestelmän esiselvitys* (Helsinki: Riista- ja kalatalouden tutkimuslaitos, 2008); Maa- ja metsätalousministeriö, Lahnojen ja särkien poistokalastus vähentää tehokkaasti vesien ravinteita (12.3.2013), https://mmm.fi/-/lahnojen-ja-sarkien-poistokalastus-vahentaa-tehokkaasti-vesien-ravinteita, accessed September 6, 2023).

68 Lauri Koli (ed), *Suomen eläimet 3* (Porvoo: Weilin + Göös, 1984).

69 See, e.g., Koli, *Otavan kalakirja*.

tonen, who wrote a textbook *Iso kalakirja* (*Big Fishbook*), did not classify any species as trash fish. Every species of *Cyprinidae* were characterised as edible. Whilst blue bream was characterised as a tasty fish that could be served either roasted or smoked despite its numerous fish bones, silver bream continued to be labelled irrelevant as human food, because its meat was "watery with numerous fish bones." Lehtonen however noted that only a few people had ever tasted it.[70] The characterisation Lehtonen employed in the textbook reminisced the first edition of *Suomen selkärankaiset (Finnish vertebrates*) that had been published in 1882. Whilst textbooks continued to classify fish species according to their commercial value and taste, they encouraged Finns to consume more domestic fish according to the revised scientific discourse at the advent of the new century. This said, the concept of trash fish was employed in cookbooks and in recreational fishing after the 1970s.[71]

One of the main reasons for the change visible in the textbooks was the increasing consumption of imported and farmed fish that occurred in the last decades of the twentieth century. In 1990, a committee appointed to increase the consumption of domestic fish species noted that consumption had become more selective with both imported and farmed fish being in greater demand than domestic fish. Yet the annual consumption of Baltic herring was 11.5 million kilos, while that of vendace was 3.4 million, whitefish 3 million, pike 1.6 million, Atlantic salmon and trout combined 1.7 million, and other species including pike-perch, bream and perch totalled 1.6 million kilos. In contrast, the consumption of farmed species, mostly rainbow trout, was 11 million kilos. Therefore, the committee argued that the essential requirement for increasing the consumption of domestic species was to improve their quality. Similarly, it was important to improve the transportation of fish to serve fresh fish to urban consumers. The committee noted that increasing the catch was possible only by intensifying the fishing of less valuable species, although they did not provide much income for fishers due to their limited demand. There was no reference to trash fish in the committee report.[72] The consumption of farmed and imported fish grew steadily during the 1990s, whilst that of domestic fish diminished. In 1999, the average annual consumption of fish totalled some 12 kilograms of which the proportion of imported fish was nearly 6 kilos.[73] Simultaneously, the annual catch had increased to over 150 million kilos of which some 90 million kilos of the

70 Lehtonen, *Iso kalakirja*, 118–165, 148–149, 157.

71 See, e.g., Hannikainen, "Roskaa vai ruokaa?" See also Yrjö Ylänne, *Kalamiehen käsikirja* (Helsinki: Otava 1976).

72 Kotimaisen kalan toimikunta, *Kotimaisen kalan toimikunnan mietintö*, Komiteamietintö 18 (Helsinki: Maa- ja metsätalousministeriö, 1990).

73 Luonnonvarakeskus, Kalan kulutus 2018, https://stat.luke.fi/kalan-kulutus-2018_fi, accessed January 12, 2022.

catch consisted of Baltic herring that was mostly fed to farm and fur animals.[74] The ultimate paradox of Finnish fisheries and fish consumption was that some fish species that had been amongst the most valued and consumed at the beginning of the twentieth century had suffered from devaluation and their consumption had diminished by the end the century.

Conclusion

In this chapter, I have analysed the cultural history of fish and how different fish species have been valued in Finnish society during the twentieth century. I have also considered why scientific discourse on fishing classified some fish species as trash. Admittedly, some fish species have been more valued for their taste and nutrient richness, whereas some have been disliked because of their peculiar appearance or characteristics, above all odour or taste. Nonetheless, an idea that certain species of fish could be inedible was alien in Finnish society in the late nineteenth century. The evidence suggests that almost all fish, which were caught, were eaten, in most cases salted or otherwise cured.

Following a similar discourse that had modernised agriculture, scientific discourse on fishing was initiated during the 1890s and it classified all fish species according to their commercial value in addition to which it aimed at modernising subsistence fishing into a viable industry. Thus, it affected the consumption of fish by attempting to concentrate fishing on the most commercially valuable species only. Textbooks on fishing published after 1890s disseminated the new three-tier classification of fish species. Accordingly, all fish species were divided into commercially valuable, less valuable and worthless, meaning trash fish. There were only a few species that were classified as trash fish in the scientific discourse: all species of spicklenecks, silver bream and blue bream. Their worthlessness was based on their small size and hence, limited commercial value, and on the fact that they were perceived either to compete over food with or to eat the roe of the more valuable species.

The decline of the most commercially valuable species, most notably Atlantic salmon, trout, and whitefish, after the 1950s affected the scientific discourse. The only species that could withstand intensified fishing were those that had been classified less valuable. Therefore, the three-tier classification changed in the 1970s into a new two-tier classification ranking all species to either commercially valuable or

74 Luonnonvarakeskus, Tilastotietokanta, Suomen kalastuksen saaliit (1000 kg) 1980–, http://statdb.luke.fi/PXWeb/pxweb/fi/LUKE/LUKE__06%20Kala%20ja%20riista__02%20Rakenne%20ja%20tuotanto__08%20Kalastus%20yhteensa/03_Kokonaiskalansaalis.px/, accessed June 30, 2021.

less valuable. The concept trash fish disappeared from the scientific discourse on fishing even though it was employed in culinary and recreational discourses.

The commercial logic of the scientific discourse on fishing set it apart from other discussions on wild animals, most of which were perceived as either a direct or indirect threat to humans. Thus, trash fish represented one of the most contradictory classifications of animals. This was emphasised by the fact that neither the nature conservation movement nor the environmental movement protested the classification that the scientific discourse promoted. Despite its strong, partly frightening, rhetoric that aimed at exterminating worthless species, the scientific discourse on fishing did not cause the removal of any species from any lake or pond in Finland. The only cases of removing worthless species, such as roach and silver bream, took place either as part of clearing natural ponds for farming fish, most notably rainbow trout, or as part of the new policy to improve the water quality of the lakes suffering from the lack of oxygen that began in the 1960s.

Karin Dirke

11 Happy cows? Unravelling contexts of Swedish farmed animals

Introduction

The following chapter aims at unfolding the multilayered circumstances from which the current debates about cattle and their living conditions grew, giving meaning to the idea of the "happy cow," seen in the marketing of dairy and meat products, as well as popular events such as pasture releases. The goal is to investigate how the well-being of cows was understood in different contexts, opening a historisation of modern animal welfare, food production and husbandry. The chapter asks why ideas about the necessity of cows to be happy emerged in the debate at the time they did, and what areas of conflict they related to. The method used is archaeological, broadly contextualising the idea of the necessity of cows being happy. A wide range of sources are used: the critical articles, propositions and debates concerning animal welfare laws, the industry magazine *Husdjur* and literature about the handling of animals in zoos and in training. The case here is Sweden with its claim and self-image of being a nation with a very high level of animal welfare.

The centre around which this study gravitates is the critique initiated by the author of children's books, Astrid Lindgren, who engaged in the debate in the middle of the 1980s. In a series of articles published in Swedish newspapers she, together with the associate professor of veterinary medicine, Kristina Forslund, brought insights about the bleak living conditions of farmed animals in Sweden to the general public. The articles were later brought together, commented on and published in the book *Min ko vill ha roligt (My cow wants a good time)* in 1990.[1] The articles and the book explicitly demanded that farmed animals had the right to be happy, by describing them as fundamentally unhappy in modern rationalised farming practices.[2]

1 Astrid Lindgren and Kristina Forslund, *Min ko vill ha roligt. Inhopp i djurskyddsdebatten – hur och varför det blev som det blev* (Stockholm; Rabén & Sjögren 1990).

2 Lindgren and Forslund, *Min ko vill ha roligt,* 14, 18–19.

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Figure 11.1: A cow from the recent past. Photo by Jan Koetsier. Pexels. https://www.pexels.com/photo/black-and-white-dairy-cow-s-head-2647053/.

The debate

The articles were originally published in the national newspapers *Dagens Nyheter* and *Expressen* from 1985 to 1989. They were written in the popular, vernacular, humorous yet serious style, characteristic of the well-known author Astrid Lindgren, and had a huge impact on the debate on animal welfare in Sweden at the time. Lindgren and Forslund brought attention to the state's forceful ambition to rationalise production in order to rapidly increase the economic growth of the agricultural industry. In 1967, the government proposed measures to encourage investments in industries to further economic growth.[3] Farming and husbandry were, according to Lindgren and Forslund, thereby pushed to modernise and further increase the level of intensity.[4] Several articles described the conditions for farmed animals, pleading for the release of cows from their imprisonment in factory farms: "Let them, just for once, see the sun, escape the murderous roar of the fans, let them just for once breathe fresh air instead of the gasses from manure."[5] The

3 Kungl. Maj:ts proposition nr 56, 1967, 13, 23.
4 Lindgren and Forslund, *Min ko vill ha roligt*, 7.
5 Lindgren and Forslund, *Min ko vill ha rolig*, 22, translation by author.

blame in the articles was not placed on farmers, who were believed to be interested in small-scale family farms and high levels of animal welfare.[6] It was instead attributed to a Swedish agricultural policy which was described as driven by a one-sided profitability interest.[7] As Lindgren was considered a national icon, her children's books being widely popular, the knowledge about the impact industrial food production had on individual animal's lives became commonly known. The debate clearly exposed the link between agricultural policy and animal welfare, putting economic interest against ethics, addressing animal welfare as a specific national, Swedish trait.[8]

The surfacing of a debate concerning the happiness of farmed animals clashed with both the Swedish national self-image as animal friendly and the farming industry's interest in selling their products. Both shared an interest in marketing agricultural products as ethically sound and trustworthy. Lindgren and Forslund demanded a new animal welfare law to counter the effects of forces driving the intensification and rationalisation of agriculture, which was eventually realised in 1988.[9]

Background

The notion that the well-being of farmed animals was threatened by modernised husbandry became established during the latter part of the twentieth century. The human relationship with other animals was widely debated and following the protests of the 1970s with public spokesmen for the right of animals, such as Richard Ryder and Peter Singer, the approach of the 1980s became focused on individual relationships with animals. Animals were put forward as individuals, not production units in a factory. Being a political movement in the 1970s, the critique of exploitation of animals turned to academia in the 1980s and this resulted in a greater interest in the animal's perspective. The idea of animals looking at us, rather than the other way around emerged in the 1980s. The Western human subject was no longer the obvious point of departure for knowledge, and questions were asked about the animal point of view. Marxist art critic John Berger first brought attention to how marginalised animals had become in capitalist society. Berger's essay *Why look at animals*, now a classic within human-animal studies, challenges the Western capitalist view of animals. Berger starts with the

6 Lindgren and Forslund, *Min ko vill ha roligt,* 20.
7 Lindgren and Forslund, *Min ko vill ha roligt*, 18–24.
8 Lindgren and Forslund, *Min ko vill ha roligt*, 13.
9 Lindgren and Forslund, *Min ko vill ha roligt*, 67–69.

disappearance of animals from public view and how this process coincides with their appearance as representations in zoos, as pets or toys. Animals have become objects, props to modern humans in capitalist societies and are unable to return the glance of the zoo visitor. The animals have thus been pushed into a capitalist mode of life, transformed to commodities.[10] The call from Berger was answered in academia. In the 1980s and 1990s, there was a general shift towards an interest in the animal perspective, sometimes labelled the "animal turn." Jacques Derrida countered Berger's accusation of the lack of animal gaze with the sharp eye of his cat, unfolding the Western inability to meet the gaze of the non-human world. Animals thus entered academia and the rest of the human world.[11]

The interest in animals and their perspective was, however, not exclusive to academia but was widespread in the 1980s, precisely captured for instance in Gary Larson's *The Far Side* cartoons. In his comic strips, Larson's visions of cows and other animals exposing human futility and ridiculousness represented animals as watching humans.[12] Animals seemed to be gazing at humans from all over.

The context of marketing

The importance of animals being "happy" is a recent idea. Previously, it was considered satisfactory if animals could be perceived as content, healthy and properly cared for. In the late twentieth century, there was a growing suspicion concerning the well-being of farmed animals in Sweden but also across Europe. The industry replied by marketing cows as being happy. The Swedish cooperative dairy company Arla launched a very successful marketing campaign in 1995 attempting to counter the grim picture of industrialised factory farming. The campaign showed black and white cows working in the "factory" depicted as a green field. This response by the farming industry has been critically analysed in several articles and book chapters.[13] In 2006, the dairy company Arla further ar-

10 John Berger, *Why Look at Animals* (Penguin, [1980] 2009), 21–24.

11 Harriet Ritvo, "On the Animal Turn," *Daedalus* 136:4 (2007): 118–122.

12 Charles D. Minahen, "Humanimals and Anihumans in Gary Larson's Gallery of the Absurd," in *Animal Acts: Configuring the Human in Western History*, ed. by Jennifer Ham and Matthew Senior (London: Routledge, 1997), 231–252.

13 Håkan Jönsson, *Mjölk – en kulturanalys av mjölkdiskens nya ekonomi* (Stockholm: Symposion, 2005),74–79; Tobias Linné and Helena Pedersen, "With Care for Cows and a Love for Milk: Affect and Performance in Swedish Dairy Industry Marketing Strategies," in *Meat Culture*, ed. by Annie Potts (Leiden: Brill, 2016), 109–128; Tobias Linné, "Grazing the Green Fields of Social Media," in *Exploring the Animal Turn*, ed. by Erika Andersson Cederholm et al. (Lund: Pufendorf Institute

ranged the first organised public pasture release in Sweden.[14] Public pasture releases have since become events, drawing a large audience, centering around the selling of dairy and meat products. Farmers sell tickets and large groups of, mostly, urban citizens arrive with the hope of seeing cows happily frolicking on the green grass. The attraction of the event is primarily said to be the happiness of the cows. It is satisfying to watch animals display what is interpreted as happiness, and the animals certainly do seem to be happy.[15]

The context of developing agriculture

Meat and dairy production was considered an important aspect of increasing the level of welfare for humans during the twentieth century. Therefore, agriculture became closely linked to the Swedish government. Food production was central to the upholding of the state, especially during the sparse years of the world wars. As a result, the state increased its control of agriculture, subsidising it and economically forming it around modernised animal husbandry, considered the most rational part of agriculture in Sweden. To ensure the production of dairy products the state governed the price of milk, cheese and butter.[16] The number of cows increased when cheap American grain pressured Swedish farmers to switch to husbandry by the late nineteenth century. When Swedish farmers were pushed into animal production due to competition, the Swedish state started to promote the drinking of milk. A propaganda campaign organised jointly by the agricultural industry and the Swedish state was launched. The practice of drinking of milk thus became popular when Sweden was industrialised. The Swedish state was corporate, the dairy-industry was developed by the state and the industry in co-operation up

for Advanced Studies, 2014); Claire Molloy, *Popular Media and Animals* (Basingstoke: Palgrave Macmillan, 2011), 101–123; Matthew Cole, "From 'Animal Machines' to 'Happy Meat'? Foucault's Ideas of Disciplinary and Pastoral Power Applied to 'Animal-Centered' Welfare Discourse," *Animals* 1 (2011): 83–101. The list of films marketing the cow as happy can be found here: https://www.youtube.com/playlist?list=PL_3FoihWKebF4gPL347v7urSC4swfCgtb.

14 Anon., "Succé för årets kosläpp", *Mälaröarnas Nyheter* https://malaroarnasnyheter.se/succearets-koslapp/, accessed January 3, 2022; Johanna Ståhlberg: "Kosläpp. Den urbana människans folknöje," in *Naturen för mig: nutida röster och kulturella perspektiv*, ed. by Katarina Ek-Nilsson et al. (Götebord: Institutet för språk och folkminnen i samarbete med Folklivsarkivet, Lunds universitet, 2014), 271.

15 Johanna Ståhlberg, "Kosläpp. Den urbana människans folknöje", 273–274. Linné and Pedersen: "With Care for Cows and a Love for Milk," 109–128.

16 Sven Holmström, *Kungl. Skogs och Lantbruksakademins Tidskrift, Suppl. 20* (1988), 282.

until the 1970s. Milk thereby was put out as a national food.[17] Milk in Sweden had long since been associated with the female gender, however, as dairy work became increasingly mechanised and scientific from the late nineteenth century the female link was challenged. The mechanisation and centralisation of production also meant that male workers increasingly became employed in the dairy industry.[18] Milk, as a product, thus became associated with modernised, male and rational production. Dairy products in particular have been framed as natural and nutritious, permeated by rural tranquility. The bovine body thereby represents both nature and the countryside.[19]

After the Second World War, the state increasingly cooperated with the agricultural industry.[20] A comprehensive agricultural policy was launched in 1947 to further increase intensity and protect the business from international competition. The aim was, with the wartime period still a close memory, for the state to uphold a stable food supply.[21] In this way the Swedish state became increasingly tied to its agricultural industry.

The amount of milking cows decreased by 60 percent from the 1950s to the 1980s, however milk production only decreased eight percent. The return per cow was at the same time doubled, which shows the increasing intensity of agricultural production.[22] This process was described as positive for the general welfare of animals. The great increase in productivity was tied to improvements in the health and welfare of animals. The same idea of agricultural output as a measure of the level of welfare for cows, has also been noted in Denmark.[23] For the state as well as for the agricultural industry, rationalisation, mechanisation and productivity thus became primary goals.

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17 Håkan Jönsson, *Mjölk – en kulturanalys av mjölkdiskens nya ekonomi*, 27–30. A similar process occurred in Finland and has been analysed in Taija Kaarlenkaski, "Cattle Tending in the 'Good Old Times' Human-Cow Relationships in Late Nineteenth-Century and Early Twentieth-Century Finland," in *Affect, Space and Animals*, ed. by Jopi Nyman and Nora Schuurman (Abington and New York: Routledge, 2016), 26.

18 Lena Sommestad, "Gendering Work, Interpreting Gender: The Masculinization of Dairy Work in Sweden, 1850–1950," *History Workshop*, no. 37 Spring, (1994), 57–75.

19 Molloy, *Popular Media and Animals*, 114, 120.

20 Holmström, *Kungl. Skogs och Lantbruksakademins Tidskrift*, 284.

21 Holmström, *Kungl. Skogs och Lantbruksakademins Tidskrift*, 286. A similar process in Great Britain is described by Molloy in *Popular Media and Animals*, 102.

22 Holmström: *Kungl. Skogs och Lantbruksakademins Tidskrift*, 297.

23 Anne Katrine Gjerløff, "Creating the Comportable Cow – Discourses on Animal Protection and Production in Late 19th-century Danish Agriculture," in *Investigating Human/Animal Relations in Science, Culture and Work*, ed. by Tora Holmberg (Uppsala: Centrum för genusvetenskap, Uppsala universitet, 2009), 114–121.

The context of animal welfare: Debates and laws

Initially, the process of industrialisation was backed by animal welfare legislation. When Sweden was industrialised by the early twentieth century, agriculture became an important part of the modernisation process. When the first comprehensive animal welfare law was launched in 1944, its starting point was the idea of traditional methods in husbandry as being harmful to animals, although Swedish agriculture was put forward as a moral paragon considering animal welfare. Swedes were described as an especially animal loving people.[24]

The industrialisation of the farming industry and the development of animal welfare were, in this way, temporally parallel processes and firmly linked to each other by the government. In both processes the Swedish government was interested in building its marketing label. When Sweden's first comprehensive animal welfare law was established in 1944 it was thus primarily aimed at modernising husbandry. It was argued that the details of such laws could have the effect of guiding the people in how best to treat animals.[25] The idea was that the law would more effectively influence people if it took the form of detailed instructions about how not to treat animals. It seemed insufficient to simply prohibit cruelty to animals, as before. The government proceeded from the idea that the general public – despite having an especially animal friendly disposition – was neither able to determine, nor understand cruelty to animals. The maltreatment of animals was described as based in old-fashioned tradition.[26] Farmers, it was thought, needed guidance. They were prone to upholding traditional ways of keeping animals. The veterinary school's board of professors thus commented that the new law expressed a "good Swedish view of how animals should be treated."[27]

The law in this way connected modernised farming with both nationalism and the welfare of animals. Thus, the animal welfare law of 1944 aided Sweden in building a modern mechanised and efficient farming industry.

24 Kungl. Maj:ts proposition 1944, nr 43, 12, Katarina Alexius Borgström, *Djuren, läkarna och lagen – en rättslig studie om djurförsöksetik* (Uppsala: Iustus förlag, 2009), 80–81.

25 Alexius Borgström, *"Djuren, läkarna och lagen,"* 80.

26 Kungl. Maj:ts proposition 1944, nr 43, 11.

27 Kungl. Maj:ts proposition nr 1944, 43, 19. Translation by author.

The critical context: Animal machines

However, in the 1960s the animal welfare movement was radicalised. The progressive industries in farming and meat production and their level of animal welfare were questioned. Could farmed animals really be understood as happy? The link between the welfare of animals and modernised, industrial food production was challenged. Thus, the previously parallel developments began to depart from each other. Voices, such as Rachel Carson's and Ruth Harrison's emerged, raising concerns about the downsides of the so-called rationalisation process.

In 1964, Ruth Harrison published her ground-breaking and exposing book *Animal Machines*. The book delved into the conditions of the rapidly expanding postwar farming industry. The book was seen as an equivalent to Rachel Carson's *Silent Spring* and Carson wrote the foreword to the first edition. The book exposed a reality of intensive farming previously unknown to the general public. The book concluded with a list of requirements regarding the treatment of farm animals.[28] Just as Carson's primary mission was to inform the general public and alert them to the importance of their awareness of the conditions, Harrison first and foremost wanted to expose circumstances of which the general public seemed to have been kept unaware. The zeitgeist in Europe after the Second World War was permeated by a sense of atrocities happening outside the view of the general public.

Harrison's book thus was a game changer. As a response to the intense reaction in Britain to the information provided in the book from the general public, the so-called Brambell committee was launched by the British government to investigate intensive farming practices.[29] In 1965, an investigation was carried out into the welfare of intensively farmed animals in Britian. As a response, the so-called "five freedoms" of welfare were adopted by the Farm Animal Welfare Council and the Farm Animal Welfare Advisory Committee and dispatched in 1979.[30] The five freedoms of animal welfare are freedom from hunger and thirst, from discomfort, from pain, injury and disease, to express normal patterns of behaviour, and from fear and distress.[31] Matthew Cole argues, in a critical article in *Animals*, that the

28 Edward N. Eadie, *Understanding Animal Welfare. An Integrated Approach*, Electronic resource, (Berlin, Heidelberg: Springer, 2012), 20–21.

29 Heleen van de Weerd and Victoria Sandilands, "Bringing the Issue of Animal Welfare to the Public: A Biography of Ruth Harrison (1920–2000)," *Applied Animal Behaviour Science* 113 (2008), 404–410, 405–406.

30 Farm Animal Welfare Council, https://webarchive.nationalarchives.gov.uk/ukgwa/20121010012427/http://www.fawc.org.uk/freedoms.htm, accessed December 28, 2021.

31 Robert John Young, *Environmental Enrichment for Captive Animals* (Oxford: Blackwell Science, 2003), 16.

response to Harrison's *Animal Machines* was the industry promoting "happy meat" as an ethical way to continue the exploitation of farmed animals. Cole uses Foucauldian concepts of power to understand the shifting discourse on farmed animals. The discipline of the factory farms is after Harrison's book replaced by a pastoral power. This is not because of a shift in the forms of governance but rather a change due to their perceived efficiency, according to Cole. The welfare-centred farming practices allow the animal to choose between aspects of its environment, and the animal is able to provide knowledge about what it feels through preference testing. The happy meat discourse in this way provides a popular expression of pastoral power, in Cole's interpretation.[32]

In Sweden, Harrison's book was also noted. The general public were shocked at reports from the factory farms. The Swedish state thus found itself in between a force to drive the modernisation of agriculture, with the law of 1944 considered to be a measure to increase the welfare of animals, and critics who accused the Swedish government of neglecting the welfare of animals for the sake of rational progress. The distance between food production and the living bodies of animals, firmly upheld by the agricultural industry and the state, this way collapsed in the public view, ruining the public trust in food production.

The context of consumer trust: The cadaver scandal and mad cow disease

Thus, the previous stable link between ideas of rationality, animal well-being and quality of products, was broken. The idea of the rationalisation and modernisation of the agricultural industry had been linked to a detachment of the agricultural commodities, such as milk or meat, from the living bodies of animals. Sociologist Richie Nimmo describes milk as a hybrid flow of cowness, connecting the social and natural worlds. In the nineteenth century, milk was a very local product, connected to the warmth of the cow's body. Milk directly from the cow signaled freshness and purity. This, however, changed with transport and refrigeration: "[T]he human-bovine encounter embodied in milk was increasingly rendered an abstract and absent presence, rather than something tangible and immediate." The warmth of milk instead became associated with the growth of

32 Cole, "From 'Animal Machines' to 'Happy Meat'?," 83–101.

bacteria. Milk had to be transformed, cutting the link to the living animal.[33] In discourse – food production was in this way separated from the animals, which also meant that consumers lacked insight in the business. An analysis of modern pasture releases and open farm events in Sweden, describes the events as stages to enforce and uphold this divide,[34] as the agricultural business was continuously dependent on a high level of trust from consumers. When information about the downsides of industrial, modernised farming leaked to the general public, it caused uproar.

In December 1985 the so-called cadaver scandal broke to the population in Sweden, exposing the widespread practice of mixing meat and bone meal from carcasses in food for animals.[35] The agricultural consultant Anders Larsson had long since warned against mixing meat and bone meal from all sorts of slaughter waste and dead animals in food for farmed animals and pets. When the radio program *Konsumentekot* followed up on the story, other media and consumers responded with disgust. The government promptly reacted with a ban on using dead animals as food for cattle, however the damage had already been done to the industry.[36] The prompt action taken to ban meat- and bone meal as food for farmed cattle, probably primarily to protect the industry from bad publicity, perhaps saved Sweden from the even larger disaster affecting Great Britain the following year. The first suspicions of a new cattle disease emerged in 1985, however, it was not until the following year that BSE (Bovine Spongiform Encephalopathy) was diagnosed. The animals turned out to have been infected by eating meat- and bone meal. The connection immediately prompted a ban against feeding meat and bone meal to cattle in Britain, however, control of the export of meat meal to other countries was less prompt. The disease caused great anxiety among consumers and also caused problems in the politics of trade in animal products.[37] In the press the disease was called “mad cow disease” because of the

33 Richie Nimmo, “Bovine Mobilities and Vital Movements: Flows of Milk, Mediation and Animal Agency,” in *Animal Movements, Moving Animals. Essays on Direction, Velocity and Agency in Humanimal Encounters*, ed. by Jacob Bull, (Uppsala: Centre for Gender Research, Uppsala University, 2011), 57–66, citation 66.

34 Linné and Pedersen, “With Care for Cows and a Love for Milk,” 125.

35 In the industry magazine *Husdjur* 12 (1984): 20, there was a letter to the editor warning against the use of animal protein in food for cattle, however, the Svenska Lantmännens Riksförbund, promptly replied that no negative effects of such use had been noted.

36 Erik Fichtelius, “Nyheter, katter, elefanter och kadaver” and Stig Widell, “Kött- och benmjöl i BSE-krisens epicentrum,” *Kungl. Skogs- och Lantbruksakademiens Tidskrift Galna ko-sjukan – köttmjöl och kannibalism* 159:3 (2020): 9–10, 37.

37 Marianne Elvander, “Prionsjukdomar hos djur,” in *Kungl. Skogs- och Lantbruksakademiens Tidskrift Galna ko-sjukan – köttmjöl och kannibalism* 159:3 (2020): 24–25.

scary, neurological and behavioural symptoms seen in its later stages. In the following years, the link between BSE and the just as deadly human form of the illness – Creutzfeldt-Jakob's disease – was established. Affected humans fell ill and died because they had eaten meat from infected cattle. The crisis for the agricultural industry was obvious and acute. Consumer's trust in agricultural products plummeted all over Europe, laws were founded against meat and bone meal as fodder and European authorities established mechanisms for control of both health in, and trade of, farmed animals.[38]

The cadaver scandal and BSE exposed a rift between the general public's ideas about the conditions of farmed animals and the reality of intense agricultural production. Animals behaving normally, or being happy, seemed further from reality than ever.

The context of animal behaviour

Marketing animals as being healthy, happy and behaving naturally was an attempt to re-establish consumer trust in wholesome products. This, however, required an understanding of what a happy cow was. The idea that animals, in order to be considered to be happy, needed to have psychological requirements fulfilled, beside the basic physiological necessities, developed through the twentieth century but became especially highlighted from the 1980s. Awareness about the lack of knowledge concerning the behavioural requirements of farmed animals in intense production emerged, motivating the government to demand further research into these matters.[39] The unhappiness of farmed animals, eloquently exposed by Lindgren and Forslund, seemed intuitively obvious. In order to establish the idea that Swedish farmed animals were well kept and able to behave in normal ways, new laws on animal welfare, distancing Swedish agriculture from visions of intensive farming practices, were required. Both the state and the industry thus promoted the idea of animals being happy in farming practices. Making animals happy not only meant feeding and housing them properly, but also providing them with mental stimulation.

Originally, the idea that animals demanded mental stimulation to stay content grew in animal keeping in zoos and laboratories. Canadian neuropsychologist Donald Hebb noticed in 1949 that the laboratory animals he brought home

38 Marianne Elvander, "Introduction," *Kungl. Skogs- och Lantbruksakademiens Tidskrift* nr 3 *Galna ko-sjukan – köttmjöl och kannibalism* 159:3 (2020): 7–8.

39 The governments proposition 1985/86: 74, 7.

for his children to play with later increased their performance in cognitive tests. The stimulating environment at home seemed to improve the cognitive abilities of laboratory rats in comparison to the barren environment of the laboratory cages.[40]

The problem of the perceived unhappiness of caged animals also concerned the general public's view of zoos. Caged animals pacing endlessly in barren environments were simply not attractive to zoo visitors, which prompted the zoo-industry to change.[41] Attempts to encourage zoo animals to conduct more species-specific and (to the visitors) interesting behaviour were rather common. The goal was to increase the range of behaviour as well as to reduce unnatural and stereotypic patterns.[42] The solution to the problem was perceived to be enrichment of the captive animal's environment. Two different approaches to environmental enrichment emerged during the twentieth century: the naturalistic approach and behavioural engineering. The naturalistic approach was an attempt to design the animal's environment so it would resemble its natural habitat. The idea was that animals respond to external stimuli in the environment and thus will behave more naturally. The approach was introduced in the early twentieth century by zoo-director Carl Hagenbeck in Hamburg Zoo (1907).[43]

The behavioural engineering approach, however, became more influential in modern Swedish farming. It was originally introduced by primatologist and eugenicist Robert Yerkes in 1925 and based on a behaviourist approach. This method was an attempt to stimulate animals by introducing devices that the animals could operate to receive rewards. The two different tactics were in practice often mixed, however they stemmed from different views on animal welfare.[44] In the Swedish debate the demand made by Lindgren and Forslund for summer grazing of cows was an example of the naturalistic approach. The 1988 animal welfare law indeed did include the decree about free summer grazing for cows, however, the behavioural engineering approach was easier to adopt in intense farming environments. One example was the automatic milking system, providing cows with

40 Natalie J. Ball, Eduardo Mercado and Itzel Orduna, "Enriched Environments as Potential Treatment for Developmental Disorders: A Critical Assessment," *Frontiers in Psychology* 10 (2019): 466.

41 Louise S. Reade and Natalie K. Waran, "The Modern Zoo: How Do People Perceive Zoo Animals?," *Applied Animal Behaviour Science* 47 (1996): 109–118.

42 Young, *Environmental Enrichment for Captive Animals*, 1–2.

43 Nigel Rothfels, *Savages and Beasts: The Birth of the Modern Zoo* (Baltimore and London: Johns Hopkins University Press, 2002), 8.

44 Young, *Environmental Enrichment for Captive Animals*, 7–9.

the option to choose when to be milked, which was first launched in the Netherlands in 1992.[45]

These ideas emerged simultaneously with a wider adoption of behaviourist approaches in the training of animals, especially dogs. An international turning point was Karen Pryor's *Don't Shoot the Dog* (1984). The book presented B. F. Skinner's behaviourist and universalist approach to relationships between the human (trainer) and other (human or non-human) animals. The Skinnerian universalism – treating all animals as subjects with the ability to choose between a range of behaviours – offered equality (at least in the ability to choose between different options) to animals. In a discussion of the history of dog training, polish literary scholar Justyna Wlodarczyk points to the similarities between Skinner's ideas about how to manage animals by offering options and encouraging the animal to voluntarily make the right choices, and Michel Foucault's ideas of how a neoliberal *homo economicus* is governed. Wlodarczyk argues that by reading Skinner alongside Foucault the reason why Skinner's ideas became popular in dog training at the time they did (the 1980s), becomes clear.[46] Wlodarczyk states that "neoliberalism has fooled us into believing that choosing from among several options constitutes thinking and is thus a guarantee of freedom."[47] Offering choice to animals was presented as a method not only to encourage them to perform the right behaviour, but also to make them happy.[48] Thus, the idea of freedom of choice as a base for animal welfare, and a necessity for the animals to be perceived as having a good quality of life, was established. To promote farmed animals as happy to the general public it therefore became important to display them as free and able to choose among a range of behaviour.

In Sweden one of the solutions to the problems of intense factory farming thus was found in offering cattle a stimulating environment and the possibility to choose between different options. Cows, to a greater extent, began to be kept in loose house systems. In the industry magazine *Husdjur* (Farm animals) ethics and housing systems were widely discussed from the 1980s. In 1983, it was noted in the magazine that the interest in loose housing systems was increasing.[49] Articles

45 M. Caria, F. M. Tangorra, S. Leonardi, V. Bronzo, L. Murgia and A. Pazzona: "Evaluation of the Performance of the First Automatic Milking System for Buffaloes," *Journal of Dairy Science* 97:3 (2014): 1491–1498.

46 Justyna Wlodarczyk, *Genealogy of Obedience: Reading North American Dog Training Literature 1850–2000s*, (Boston: Brill 2018), 135–139.

47 Wlodarczyk, *Genealogy of Obedience*, 143.

48 Karen Pryor, *Don't Shoot the Dog! The New Art of Teaching and Training*, revised edition (New York: Bantam books, [1984] 1999), 175.

49 Anon., "Intresset för lösdriftsstallar ökar," *Husdjur* 10 (1983): 54.

about loose housing, as well as examples from other countries, continuously appeared during the 1980s.[50] The magazine mainly focused on economic factors and discussed the productivity and health of cows in different systems, however, occasionally the cows enjoyment with the loose housing system was noted: "The fodder-table is open day and night and one can see that the cows enjoy the more natural way of eating: eat – rest – ruminate, following their own rhythm."[51] The linear time of cows was in this way merged with a more circular rhythm. As literary scholar Amelie Björck points out, cows were given the opportunity to choose when to be milked or groomed, however, they are still trapped in a modernised production line requiring them to deliver their milk to humans.[52] The government strongly encouraged loose housing in the new animal welfare law 1988.[53] It became an obligation, if the products were to be labelled as animal friendly, that cattle were kept in loose house systems. Further, the marketing of cows as possessing agency to be able to choose their way of life became ubiquitous in media representations of cattle.[54] Freedom of choice is thus represented as important for the happiness of cows.

New animal welfare law

The new animal welfare law provided the means for the government both to establish Swedish farmed animals as having a good quality of life, being healthy and to display Sweden as a moral paragon concerning animal welfare. When the 1988 law on animal welfare was passed in Sweden it was given much publicity and was considered the most far reaching and radical animal welfare law ever.[55] The older law from 1944 now seemed outdated. Astrid Lindgren expressed her support of the law. The proposition for the law of 1988 does not explicitly speak

50 Anon., "Intresset för lösdriftsstallar ökar," 56; Anon., "Reportage från lösdrift i Frankrike," *Husdjur* 4 (1984): 44; Anon., "Stall eller bete, vad säger ekonomin?," *Husdjur* 5 (1984): 26–29; Anon., "Djurhållningsdebatt," *Husdjur* 12 (1984): 5; Anon., "Nya idéer krävs," *Husdjur* 6/7 (1985): 30–31, Anon., "Korna behöver motion," *Husdjur* 1 (1986): 24–25; Anon., "Kovård och vintermotion," *Husdjur* 4 (1986): 43; "Lösdrift för 30 kor," *Husdjur* 10 (1987): 58–59.

51 Anon.,"Lösdrift för 30 kor,"59, translation by author.

52 Amelie Björck, *Zooësis. Om kulturella gestaltningar av lantbruksdjurens tid och liv* (Glänta 2019), 19.

53 Regeringens proposition 1987/88:93 om djurskyddslag, m. m., 21.

54 Molloy, *Popular Media and Animals*, 117–119.

55 Alexius Borgström, *Djuren, läkarna och lagen*, 119.

of "happy" animals. The word used is "wellbeing."[56] The law was directly tied to nationalistic ideas about the Swedish mentality. "In our country animal welfare is firmly established in the consciousness of the people. Guaranteeing animals protection is an important part of our national heritage" the proposition proudly states.[57]

The great publicity concerning the new law was skillfully used by the social democratic government. The climax of the propaganda was when the new law was presented as a birthday present, in November 1987, when Lindgren turned 80, from the government to the writer. The national iconic writer, animal welfare, Swedish agriculture and the Swedish government were thus closely tied together. Animal welfare in the proposition is portrayed as a cultural heritage worth protecting. The 1988 animal welfare law thus made it possible for the Swedish government to promote itself as both animal friendly and pro-agricultural industry, countering the critique against the rationalisation process. The pasture releases so popular today can be seen as enactments of the decrees of the 1988 law.

The 1988 animal welfare law, apart from demanding health and freedom from cruelty, also required that captive animals should be able to perform natural behaviour. The idea that animals should, according to the law, be able to behave in a "natural" way was in many ways revolutionary. It opened the debate about what should be considered normal animal behaviour. The law was in practice, however, quite ambiguous.[58] It had the potential for change, but has since been heavily criticised for being weak. Lindgren and Forslund expressed their disappointment with the new law in the concluding pages of their book.[59]

Conclusion

It can first and foremost be established that the "happy cow" has little to do with actual cows being happy. In this chapter I have argued that the idea emerges from multiple contexts. First there is the agricultural industry. During the twentieth century, it had been pressured by a rapid intensification process, decreasing outcome and a struggle for the general public's trust in the products. Second, animal welfare laws have changed during the century in response to the struggles of the agricultural industry. It has been an interest of the state to uphold and market agriculture

56 Regeringens proposition 1987/88:93 om djurskyddslag, m. m., 14.
57 Regeringens proposition 1987/88:93 om djurskyddslag, m. m., 14.
58 Alexius Borgström, *Djuren, läkarna och lagen*, 120.
59 Lindgren and Forslund, *Min ko vill ha roligt*, 93–100.

and this has been accomplished both by subsidies and animal welfare laws addressing specific issues of the living conditions of farmed animals. Through the 1960s, 1970s and 1980s, the so-called "factory farms" were questioned. In Sweden the cadaver scandal, and in Europe BSE, brought mistrust to food production. Trustworthy food production in the public mind became linked to the natural behaviour of the animals. In particular, the debate initiated by Astrid Lindgren and Kristina Forslund pointed to this. Enrichment of the environment of farmed animals thus came into view. This concerned both environmental enrichment: giving cattle the right of free summer grazing; and behavioural enrichment: giving cows the options to choose when to eat, when to be milked or groomed. The idea of enrichment by choice came from studies in behavioural enrichment, especially in zoos but also probably from the widely popular behaviourist dog training methods of the 1980s. To the general public, the happiness of cows seemed to be linked to their ability to have free choice.

Third, the idea of the happy cow emerged at a time when Western societies, in philosophy, culture and science increasingly focused their attention on the gaze of the animal. Culturally, the cow seemed to turn its gaze towards the humans. The Swedish state responded by establishing a law which seemed to give farmed animals the ability to behave naturally. The agricultural industry further enforced the idea of the happy cow by providing the general public with encounters and insights, in advertising and through events, with free cows choosing to work in a factory farm and receiving a summer vacation in the pasture. The idea of the happy cow thus presented cattle as free to manage their lives, accepted them as agents and gave them freedom of choice. Linking the 1988 law to both Astrid Lindgren and ideas about happy cows, the state underpinned the view of Swedish husbandry as being wholesome, animal friendly as well as efficient.

Tobias Linné

12 Swedish agriculture and farmed animals in social media

Introduction

On *Instagram*, *Facebook*, *TikTok* and other social media, Swedish farmers are posting pictures and videos from their farms with the animals as the main stars. Swedish farmers have become more active in social media during the last decade, much like many other professions. Today, these communication channels are an important part of the opinion building efforts of the Swedish agricultural sector.[1] The rationale behind such social media posts is arguably to provide a more authentic view of animals and their lives in agriculture. Through farmers posting images and videos of their work on the farm and important events in the lives of the animals, the general public supposedly gains a more authentic view into what farm life is like. The communication often has an educational undertone addressing the disconnect to the agricultural world as a result of urbanisation and generations growing up with no relationship to the life outside the city.

This chapter addresses how Swedish agriculture and farmed animals feature in the contemporary social media landscape, and the role the social media posts by farmers play in promoting the narrative of the Swedish agricultural sector. The chapter takes its starting point from a Critical Animal and Media Studies approach, characterised by "a moral stance that focuses on the analysis of how communication and media contribute to domination and inequality,"[2] in this case the domination of other animals. With such an approach also comes an aim to develop knowledge about human-animal relations to work against exploitation of animals, humans and the environment by researching how social structures, norms, ideologies, and institutions shape the living conditions of animals in human society. The chapter critiques the appearance of Swedish agriculture and farmed animals in social media by asking questions such as: What are farmers posting on social media when presenting life at the farm? What do they disclose

1 In this text the term 'Swedish agricultural sector' is used to denote individual farmers, farmer cooperatives and businesses, and interest and lobby organisations involved in the production of agricultural goods and in the promotion of these goods for consumption.

2 Núria Almiron, Matthew Cole and Carrie P. Freeman, "Critical Animal and Media Studies: Expanding the Understanding of Oppression in Communication Research," *European Journal of Communication* 33 (2018): 368, accessed May 10, 2022, doi: 10.1177/0267323118763937.

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about their work with animals? What does this communication contribute to the public understanding of the treatment of animals in Swedish agriculture? The chapter further explores how animals are ontologised as consumables and how the ethical problems embedded in the production and consumption of animal products are addressed, asking "What are the limits of farmed animals' appearance in social media?"

Two Swedish farmer accounts in social media were chosen based on their popularity and their distinct manner of addressing the animals lives on farms. The accounts were chosen for analysis from an initial browse-through of social media pages of Swedish farmers on Facebook and Instagram. The first account selected for analysis is called *Mitt liv som bonde* (My life as a farmer).[3] It is an Instagram account active since 2013 with 17,200 followers as of May 2022. The farm featured is a dairy and meat producing farm based in northern Sweden. The second account is a Facebook account called *Bondbönans blogg* (The Farmer Chick's blog)[4] which has been active since 2012. With over 26,000 followers this account shows the life on a dairy farm on the island Öland in south-east Sweden.

The analysis began with a familiarisation of the accounts, reading through all material posted during 2020, 2021 and 2022, taking notes of what appeared as pertinent. 150 posts from *Mitt liv som bonde* and 150 posts from *Bondbönans blogg* were then selected for a more detailed analysis. All the selected posts were saved as printouts, re-read, sorted, and systematised. From the first basic coding, a thematic categorisation was developed, aimed at capturing dominant themes in the posts. More elaborate links to theoretical concepts began to emerge in the interpretative process, and new themes were constructed.[5] Some of these themes later became the main sections of the analysis presented in this chapter.

Using online material as data must be done carefully, not least as it places the material into a new context.[6] The two accounts chosen for analysis are public accounts, both in the sense that access to them is open, and in the sense that the content published is made for a public audience. The accounts being in the public domain also indicate that the account creators can be expected to have considered the possibility that the content posted could be reframed and recontextualised in ways which was not originally intended.

3 https://www.instagram.com/mittlivsombonde/.

4 https://www.facebook.com/Bondbonansblogg/.

5 Ann Gray, *Research Practice for Cultural Studies: Ethnographic Methods and Lived Cultures* (London: SAGE, 2003).

6 Christine Hine, *Ethnography for the Internet: Embedded, Embodied and Everyday* (London: Bloomsbury Academic, 2015), 188.

Farmed animals in media and popular culture

Popular media images and narratives are crucial components of the norming process that establish and sustain the relations between humans and animals.[7] As several animal studies and critical animal studies researchers have shown, farmed animals seldom figure in the news or in TV shows, but rather frequently in advertisements for food products.[8] This means that when farmed animals are represented more nuanced representations are often left out in favour of advertising and marketing narratives, where the animals figure as symbols used simply to sell the products made from them.

The invisibility of farmed animals' real lives in media and popular culture can be seen through a broader lens, as an example of what Norbert Elias calls the concealment of the animal origin of meat.[9] During the twentieth century, for example, meat was increasingly disguised at the dinner table as cuisine.[10] However, during the last decade, several researchers have noticed a shift in the cultural invisibility of animals that are used for food; a shift that calls for a revision of the ideas about the concealment of meat.[11] A new trend in gastronomic discourse has been seen in books, documentaries, TV shows, and advertising, where the animal in meat production is acknowledged. This reintegration of animals into the discourse surrounding meat, where they often were absent before, serves to deflect critique against animal farming that has surfaced in contemporary society, as more and more has been revealed about the cognitive, affective, and social lives

7 Claire Molloy, *Popular Media and Animals* (Basingstoke: Palgrave Macmillan, 2011); Randy Malamud, *An Introduction to Animals and Visual Culture* (Basingstoke: Palgrave Macmillan, 2012).

8 Barbara J. Phillips, "Advertising and the Cultural Meaning of Animals," *Antennae: The Journal of Nature in Visual Culture* 23 (2012): 354–360; Molloy, "Popular Media and Animals"; Carrie Packwood Freeman, "This Little Piggy Went to Press: The American News Media's Construction of Animals in Agriculture," *Communication Review* 12 (2009), accessed May 10, 2022, doi: 10.1080/10714420902717764; Jennifer E. Lerner and Linda Kalof, "The Animal Text: Message and Meaning in Television Advertisements," *The Sociological Quarterly* 40 (1999), accessed May 20, 2022, doi: 10.1111/j.1533-8525.1999.tb00568.x; Cathy B. Glenn, "Constructing Consumables and Consent: A Critical Analysis of Factory Farm Industry Discourse," *Journal of Communication Inquiry* 28 (2004), accessed January 12, 2022, doi: 10.1177/0196859903258573.

9 Norbert Elias, *The Civilizing Process,* translated by Edmund Jephcott (Oxford: Blackwell, 1994).

10 Nick Fiddes, *Meat: A Natural Symbol* (London: Routledge, 1991).

11 Matthew Cole, "From 'Animal Machines' to 'Happy Meat'? Foucault's Ideas of Disciplinary and Pastoral Power Applied to 'Animal-Centred' Welfare Discourse," *Animals* 1 (2011), accessed May 20, 2022, doi:10.3390/ani1010083; Vasile Stanescu, "Crocodile Tears, Compassionate Carnivores and the Marketing of 'Happy Meat,'" in *Thinking the Unthinkable: New Readings in Critical Animal Studies*, ed. by John Sorensson (Toronto: Canadian Scholars' Press, 2014).

of all animals.[12] It does so by focusing on the happiness of animals and on the producers of animal food products being aware of and respecting the animals' emotions, and caring for their quality of life up until the day of their "humane slaughter."[13]

Rather than responding to the moral philosophical debates on the problem of animal agriculture, these happy animal discourses define the problem of animal agriculture as a lack of authenticity and transparency, and of people being disconnected from the realities of food production and consumption that results in a highly industrialised food system.[14] Hence, many people argue that if only consumers are given insight into how their food is produced and become connected to farm life, the ethical issues of using animals for food will be resolved. This is where social media comes in. One of the promises of social media in many different social and cultural spheres is that it gives a glimpse into a supposedly more authentic reality than that of more traditional media.[15] Herein lies much of the strength and appeal of social media communication, which has also been exploited by commercial actors for various purposes, and the animal agricultural sector is no exception in this regard.

Behind the scenes in Swedish animal agriculture

In 2016, The Swedish meat lobby organisation *Svenskt Kött* (Swedish meat) launched a communication strategy based on ideals of transparency and authenticity. On their webpage as well as in advertisements in various lifestyle and food magazines, the campaign was focused on letting farmers speak about their and their animals lives in agriculture. "The farmers are the real experts, and that's why we let them speak about their work and their animals" was the message from *Svenskt Kött*, saying that they aimed to let the farmers "communicate their knowledge and everyday life."[16] The aim of *Svenskt Kött*'s communication strategy was to support social media initiatives like those analysed here, where individual farmers give their

12 Carol J. Adams, *The Sexual Politics of Meat: A Feminist-Vegetarian Critical Theory* (New York: Continuum, 1990); Jonathan Balcombe, *Pleasurable Kingdom: Animals and the Nature of Feeling Good*, (London: Macmillan, 2006).

13 Cole, "From 'Animal Machines' to 'Happy Meat,'" Stanescu, "Crocodile Tears."

14 Cole, "From 'Animal Machines' to 'Happy Meat.'"

15 Tobias Olsson (ed.), *Sociala medier: vetenskapliga perspektiv* (Malmö: Gleerups, 2017).

16 "Bönder berättar om sin djuruppfödning – följ deras vardag!," Svenskt Kött, accessed May 20, 2022, https://svensktkott.se/aktuellt/bonder-om-djuruppfodning-folj-deras-vardag/.

followers and other visitors a presumed behind-the-scenes view into the reality of Swedish animal agriculture.[17]

At both *Mitt liv som bonde* and *Bondbönans blogg*, transparency is a key theme that is emphasised in different ways. To give a transparent and "real" representation of Swedish animal agriculture is presented as the raison d'être behind the account, as in the example below, posted at a time of a strong public debate about mistreatment of animals on Swedish farms: "The REAL image must be shown so much that it takes over! Pictures of happy, prosperous cows, where the owners spend their time having exactly that – happy, prosperous cows."[18] The authenticity of the images and stories posted is also directly addressed, as in the following post from *Bondbönans blogg*:

> I sometimes get criticised for the pictures I take being fixed and beautified.
>
> In response, I can only say that the photos I share are taken in the middle of everyday life just as it is. How in the world would I have time to sit and fix pictures or get the animals to pose exactly as I wish? They would not comply! What I show is reality, as it is![19]

Linked to the transparency theme showing the "real" life on the farm, is the idea of a disconnect between urban and rural life, and the presumed lack of knowledge in the general public of what animal farming entails and how animals are treated. Here, the farmers step in as experts addressing this disconnect. On the *Mitt liv som bonde* Instagram page, the farmer writes that she "wants to show the connection, that agriculture and the food in the store belong together."[20] The disconnect between the food producers and the consumers is described as dangerous:

> Ignorance and a growing gap between farm and table is a dangerous and frightening development. We must reverse that spiral. Both with consumers and politically. If we are to have Swedish food, everyone must understand what it means. Both as a consumer to see what primary production looks like at farm level but also how politics must act to promote Swedish food![21]

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17 The farmers in this study are themselves running the accounts, but they also have roles as ambassadors for the Swedish agricultural sector. In general, the farmers promote the viewpoints of the Swedish agricultural sector and post little critique of the kind that is sometimes seen on farmers accounts in social media (for example, critiquing low producer prices).

18 *Mitt liv som bonde,* January 20, 2020, https://www.instagram.com/p/B787Codp7VU/.

19 *Bondbönans blogg,* January 16, 2021, https://www.facebook.com/Bondbonansblogg/posts/pfbid02n84wY6Q1hzNmPGFST1QsjNWLHGAbnQqUdSkzA44oMHaWyNJUPXpFTm5X2YnaxF7bl.

20 *Mitt liv som bonde*, February 21, 2021, https://www.instagram.com/p/CLkQp6jplmz/.

21 *Mitt liv som bonde*, February 19, 2021, https://www.instagram.com/p/CLd2LflJa2T/.

On the *Mitt liv som bonde* Instagram page, the argument about the growing disconnect between rural and city life also turns into an argument for large scale agricultural production, with the underlying message that the general debate about this kind of production is skewed and that the general public is misled:

> Large or small? Good or bad? The interest in self-sufficiency is rising – great! More and more people start out small with some crops and maybe some animals. This means that the interest in where the food comes from increases – super! But it also becomes more and more of a "the smaller the better" argument. Just because it's large-scale does not mean that it will automatically be worse. It is claimed that large farms have no control over the animals and are not as caring about their animals as those who have three pigs and two cows. We who call ourselves farmers, regardless of whether you have two or two hundred, take care of our animals. If you do not love animals, you would not keep on.[22]

The idea of a disconnect between urban life and rural life that is perpetuated also transforms into a yearning of an idyllic pastime farm life. It is manifested in posts depicting beautiful landscapes and describing a different pace of life, in touch with nature and the animal world, even when the setting is a conventional large-scale farm. The images of nostalgic natural landscapes build the perception that Swedish animal agriculture of today represent such an idyll. On the accounts, consumers are enticed to be a part of what appears to be a food production built on a different animal welfare ethic. In reality, the farmers can be said to represent the same mainstream that they in some sense purport to oppose.[23] Herein lies a discourse analogous to what authors Matthew Cole and Vasile Stanescu write about when addressing how meat producers are presented as being in touch with the "natural" life and death of animals, thus deflecting concerns from ethically concerned consumers.[24] The idyllic image of animal farming also frames the treatment of animals as part of a cultural and social heritage that is natural and normal.

One of the most central tenets of Swedish agriculture's official narrative comes from lobbying organisations such as *Svenskt Kött*, arguing that Sweden has the highest welfare standards for animal agriculture in the world. The farmers in social media, posting behind-the-scenes views of farm work and the lives of farmed animals have a crucial role in upholding this narrative. Concrete examples of the role played by the farmers on social media can be seen at times of communication crises of Swedish agriculture, such as when the mistreatment of

22 *Mitt liv som bonde*, March 21, 2021, https://www.instagram.com/p/CMq-MzGJbWW/.

23 David Goodman, Erna Melanie DuPuis and Michael K. Goodman, *Alternative Food Networks: Knowledge, Place and Politics* (Abingdon: Routledge, 2011).

24 Cole, "From 'Animal Machines' to 'Happy Meat'"; Stanescu, "Crocodile Tears."

animals at a dairy farm was exposed in early 2020 by Swedish investigative journalism TV programme *Uppdrag Granskning*. At this time, farmers launched hashtags to refute the claims about mistreatment of animals, supposedly then showing the "real" image of Swedish agriculture. Both on the *Mitt liv som bonde* Instagram page and *Bondbönans blogg* Facebook page these situations are addressed:

> "That's how all cows should be treated!" "Your animals are so clean!" "Great to see animals that are treated well!" These are some of the comments I get here sometimes. It is of course nice that you like what you see and think that we take care of the animals in a good way, but comments like these also make me a little depressed and frustrated. If you only knew how many beautiful farms there are all over our country where the animals are treated just like they are with us! We are not unique in our way of caring for animals [. . .].
>
> Unfortunately, there are a few rotten eggs or farms where everything has gone terribly wrong for various reasons, but in comparison with all well-kept farms, those farms are few. Unfortunately, you rarely get to see well-kept farms in the media. There is not much news value in it, instead the few farms that are shown are farms where things have gone bad and you who do not see that many other farms then think that it looks that bad on many farms.
>
> I understand that you would get that perception, it is not strange at all, but it is extremely frustrating for us who know what it really is like![25]

Interspecies intimacy, care, and animal emotions

As shown in the previous section, the narrative constructed in the social media accounts is that of the farmers being in touch with the natural world and the animals' real lives (and deaths). Posts depicting the daily work of caring for the animals are abundant on the accounts, showing everything from how sick animals are taken care of,[26] to measures taken to improve the life quality of the animals.[27] In many of the posts, the relation between the farmer and the animals is described in strong words: "We are farmers because we are in love with cows, because we like working in and with all the changes in nature and because we like to produce excellent food for the Swedish people!"[28]

25 *Bondbönans blogg*, December 10, 2021, https://www.facebook.com/Bondbonansblogg/posts/pfbid02DVnX7hk9ghGp7aBieM74BStstw4NVNbDqnnriMUgFwrsmJR65TV488CDBWwuhEaol.
26 *Bondbönans blogg*, January 2, 2022, https://www.facebook.com/Bondbonansblogg/posts/pfbid02to7KdapPgnZ8z7DBwWQTzB6zxBCQ4fzUY7ErraGesnvYH123bSh4oZ1iayAj5FQMl; *Bondbönans blogg*, March 18, 2022, https://www.facebook.com/Bondbonansblogg/posts/pfbid02DDQPhJXxRvuJSqiKR1Nd1LAZCL93xeiSjcAr9RMy8P33rzZxp8C1yuh4iQvRiKgUl.
27 *Mitt liv som bonde*, January 25, 2020, https://www.instagram.com/p/B7wL6sMpHOz/.
28 *Mitt liv som bonde*, January 14, 2021, https://www.instagram.com/p/CKCIZw9pv9I/.

Several other studies of the relationship between farmers and their animals have shown how the relationship is often presented as running deep and long lasting.[29] There are usually certain individuals in a herd that stand out and receive special attention from the farmer because of their personality. On the *Mitt liv som bonde* Instagram page, the decision to keep one of the cows that should have been sent to slaughter, is motivated based on the individual connection to that particular animal: "She has stayed because she is such a calm and pleasant individual. She brings a calmness to the group and it is also personal for me. The bond you can get with a dairy cow, I never think I will be able to get with a meat cow."[30]

With some animals, farmers build a personal history, and a special emotional attachment.[31] Another example from the *Mitt liv som bonde* Instagram page tells the story of a cow that got sick and was killed prematurely:

> Saying goodbye to a cow friend. The downside of this profession. When animals get sick and decisions like this have to be made. For nine years, 428 has been with us. That's quite old if you're a cow. It gets a little extra hard when it's a cow we both know a lot about and that also reminds us of another time. We have been dairy farmers with her. She has been a dairy cow and milked morning and evening in the milk pit. She hung on to become a feeding cow and has managed it gallantly. So calm and always radiating warmth and kindness. Thank you for your time 428.[32]

Focusing on this special relationship in social media posts creates a public performance of an interspecies intimacy that builds on a recognition of animal emotions and sensibility, similar to what other authors have observed in different contexts.[33] At the same time, this recognition of the animals needs and emotions is paired with a rational and instrumental approach. It is interesting to note that while the farmer in the above quote is talking about her close relation to a partic-

29 Jocelyne Porcher, "The Relationship Between Workers and Animals in the Pork Industry: A Shared Suffering," *Journal of Agricultural & Environmental Ethics* 24:1 (2011), accessed May 19, 2022, doi: 10.1007/s10806-010-9232-z; Taija Kaarlenkaski and Annika Lonkila, "In Search of Invisible Cows. Collaboration, Resistance and Affection in Human-Animal Relationships on Contemporary Dairy Farms," *Ethnologia Fennica* 47 (2020): 44, accessed 1 June 2022, doi: 10.23991/ef.v47i2.88774.

30 *Mitt liv som bonde*, December 28, 2020, https://www.instagram.com/p/CJWr5wKpfFu/.

31 Kaarlenkaski and Lonkila, "In Search of Invisible Cows," 45.

32 *Mitt liv som bonde*, March 10, 2020, https://www.instagram.com/p/B9kCH0hpO2M/.

33 Eva Giraud and Gregory Hollin, "Care, Laboratory Beagles and Affective Utopia," *Theory, Culture & Society* 33 (2016): 27–49, accessed May 21, 2022, doi:10.1177/0263276415619685; Rheana Salazar Parreñas, "Producing Affect: Transnational Volunteerism in a Malaysian Orangutan Rehabilitation Center," *American Ethnologist* 39:4 (2012): 673–87, accessed May 21, 2022, doi: 10.1111/j.1548-1425.2012.01387.x.

ular animal, she still refers to the cow by number (428) and not name. What seems to come through here is an overlap between, on the one hand, the instrumentalisation of animals seen in how the animal is referred to by number only, and the personal, close and emotional connection to the animal. On the *Mitt liv som bonde* Instagram account, a post named "The yearly day of separation" gives another example of how the recognition of the animals needs and emotions is presented alongside an instrumental approach:

> So it is done. Hectic Friday you could say! And now we are listening to this year's shouting party here on the farm. Cows on pasture and calves in the barn who did not think it was time to separate. The neighbours in the village are informed about what has been done so they understand what is behind the constant roaring now a couple of days.[34]

The situation described above can be interpreted as an example of an emotional management strategy that is typical for people involved in both caring for and killing animals. In his ethnographic study of an animal shelter, Arnold Arluke shows how the workers make use of many different strategies of managing their emotions.[35] The workers must distance themselves enough to kill, but not so much as to abandon a sense of themselves as animal-loving people.[36] Just like the shelters, the farm is an institution where the people working there often see themselves as loving the animals, but where they also have to accept that killing animals is part of the business.[37] Animals being sent to slaughter is mostly addressed indirectly in the accounts. It is described as "sending them away" or "separating them from the others." In some posts having to let go of the animals that the farmer has formed a close relationship with is described in more emotional ways. One example comes from a post on *Bondbönans blogg* Facebook page entitled "A hard night in the barn":

> Tomorrow morning, the slaughter truck arrives and picks up three really nice cows that I have had in my vicinity for over 10 years. They have been fantastic but for various reasons it is their turn now. I am so happy that in the end they had long good lives that they end in good health. On their last day they got a new pasture to graze on and an extra pat tonight. Thanks for everything![38]

34 *Mitt liv som bonde,* October 10, 2021, https://www.instagram.com/p/CU1vAdKofv/.

35 Arnold Arluke, "Managing Emotions in an Animal Shelter," in *Animals and Human Society. Changing Perspectives*, ed. by Aubrey Manning and James Serpell (London and New York: Routledge, 1994).

36 Arluke, "Managing Emotions in an Animal Shelter," 148.

37 Arluke, "Managing Emotions in an Animal Shelter," 145.

38 *Bondbönans blogg,* August 2, 2021, https://www.facebook.com/Bondbonansblogg/posts/pfbid0YVVrKSQkWewUDeHTxsqM6DVQyMt2tfMTicnynv3FDzyb5mu66HQvFd1dMXzgzneWl.

Although clearly an emotional moment for the farmer, the approach taken is an instrumental one; what needs to be done, needs to be done. What is embodied here is a caring/killing paradox, between emotional attachment and economic profit, "a conflict between rational necessity and sentimentality, between head and heart, between everyday perspective and that of the institution."[39]

It is often said that social media is centred around the display of emotions, and the accounts studied here are no exception. Limor Shifman discusses animals' presence in digital contexts, focusing, for example, on the role of cats in online meme culture.[40] She shows how pictures of cats shared online build on emotional arousal and serve to express feelings and states of minds, fulfilling diverse and socially complex roles for humans, very much like the farmed animals in close-up emotion-inciting photos on the accounts studied here. The ways in which farmers make use of social media to express their emotional connection to their animals for opinion building can also be seen as an example of what has been called affective/emotional capitalism.[41] This concept has been used to denote how affective and emotional relationships and the public display and mediation of personal affects and emotions is linked to monetary value, creating a certain allure to customers.[42] On the social media accounts analysed here, descriptions of the animal's personality traits and emotions are abundant, and the animals are described in terms such as "A lively and fresh big milker, with a mischievous and charming mind,"[43] "a charming cow with a lot of personality"[44] and "a happy and frisky heifer."[45] Much of what is presented is built around a recognition of farmed

39 Arluke, "Managing Emotions in an Animal Shelter," 162.

40 Limor Shifman, *Memes in Digital Culture* (Cambridge, USA: MIT Press, 2014).

41 Eva Illouz, *Cold Intimacies: The Making of Emotional Capitalism* (Cambridge, UK: Polity Press, 2007).

42 Arlie Russell Hochschild, *The Managed Heart: Commercialization of Human Feeling: Twentieth Anniversary Edition with a New Afterword.* 2nd ed. (Berkeley, USA: University of California Press, 2003); Jodi Dean, *Democracy and Other Neoliberal Fantasies: Communicative Capitalism and Left Politics* (Durham: Duke University Press, 2009); Alison Hearn, "Structuring Feeling: Web 2.0, Online Ranking and Rating, and the Digital 'Reputation' Economy," *Ephemera: Theory & Politics in Organization* 10 (2010): 421–438, accessed May 15, 2022, http://www.ephemerajournal.org/contribution/structuring-feeling-web-20-online-ranking-and-rating-and-digital-%E2%80%98reputation%E2%80%99-economy.

43 *Bondbönans blogg*, January 18, 2021, https://www.facebook.com/Bondbonansblogg/posts/pfbid02eH6imnAv7jwNzEB7s8XG4apphqCshtqQPkqxvYGMDhE5z8WuYCn1AbEgFEiVxjH9l.

44 *Bondbönans blogg*, January 26, 2022, https://www.facebook.com/Bondbonansblogg/videos/725142055135901.

45 *Bondbönans blogg*, December 31, 2021, https://www.facebook.com/Bondbonansblogg/posts/pfbid02PXDkbwbNATnVEKk5A6duYLK6kRnHdh11muACpVRZLuNwbL9hHom7pyaf19UijiRal.

animals as individuals with emotions and an inner life. However, in these settings, paradoxically, this recognition can serve as a way to further exploit the animals.

Animals promoting their own exploitation

Farmed animals in social media are typically made into quasi-subjects, awarded a certain degree of personhood, and occupying social positions usually reserved for pets.[46] Their individuality and different personalities are recognised: "322 Sussie is a new and funny cow in the barn. She is very curious and wants to be involved where things happen. When I flush and clean [in the barn] she wants to be involved as a water inspector."[47] Another example, focusing on the life history of an individual animal comes from the *Mitt liv som bonde* Instagram page:

> This girl is the expert escapee. She has been escaping since the day she was born. Jumped out through the diagonal front 1267 times, used her horns and opened up joints in game fences at summer pasture (yes it's true), crawled under fences and yes, if there is an opportunity to get to the wrong place to where she shouldn't be, she is the one who takes it, sometimes alone and sometimes she takes some friends with her. She is one who runs her own race. You others with relationships to cows, surely there is one like this on almost every farm? The one who swims against the tide.[48]

The animals are even presented as being curious about what is written about them in social media, as in a post with a picture of the farmer surrounded by her cows:

> Just need to show you what it oftentimes looks like when I write a post or answer one of your questions. I usually do it in the middle of work and being curious as cows are, several of them gather around me while I write on my mobile phone. As if they're wondering what I'm writing about them. You see what a dedicated crowd I have around me![49]

The recognition of animals as individuals does not stop at these kinds of descriptions. The farmers also communicate "through" the animals, letting them send

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46 Kate Stewart and Matthew Cole, "The Conceptual Separation of Food and Animals in Childhood," *Food, Culture & Society* 12 (2009), accessed May 10, 2022, doi: 10.2752/175174409X456746.

47 *Bondbönans blogg*, February 20, 2022, https://www.facebook.com/Bondbonansblogg/videos/638168464117502/.

48 *Mitt liv som bonde*, March 26, 2020, https://www.instagram.com/p/B-NR7MHJ1Cy/.

49 *Bondbönans blogg*, January 7, 2022, https://www.facebook.com/Bondbonansblogg/videos/898221890890307/.

"Friday kisses"[50] or wishing a happy weekend. Many times, this communication through the cows is used in a way to suggest how the animals feel, as in the posting of close-up picture of cows mooing towards the camera with the accompanying text saying "Can we come in soon?"[51] Another example of the farmer suggesting how the animals feel is a post about a cow that gave birth to a dead calf from *Bondbönans blogg*'s Facebook page:

> Yesterday I was asked if cow 124 Rölla was sad about her stillborn calf and how long a cow mourns [. . .]. It's easy for us humans to mix in our own feelings into the animal world. Sometimes it's right to do so, but sometimes it's wrong. [. . .] 124 Rölla first took care of her calf in the same way as a cow with a live new-born calf. She licked and buffed the calf for quite some time. After a while without any response from the calf, she stopped and lay down to rest for a while. When she got up again, she licked her calf again for a while. Without a response from the calf, she soon stopped and left the calf to go eat. After that I took her to the milking robot where she was milked and before she came back to the box I removed the calf from there. 124 Rölla sniffed a little in the box when she came back then lay down to rest. This morning she was released among the other cows in the barn and she has not shown any sign of missing a calf or being sad. Of course, it's sad that the calf was dead but I actually think it's mostly me who's sad about it. [. . .] I can understand that it may seem emotionally cold to some people, but then remember that people are people and cows are cows and we have different needs to survive and feel good.[52]

In these cases, the farmers are using similar anthropomorphic measures that animal activists are often accused of wrongfully doing, ascribing the animals with agency and intentions. Human–animal studies researcher Margo DeMello writes about how animal subjects, like the farmed animals in social media, can be seen as demonstrative of a new closeness between humans and (some) animals.[53] The social media accounts play with tearing down the boundary between humans and animals via personalisation and by making the animals into almost-humans behaving in ways humans would in social media. On the *Mitt liv som bonde* Instagram account, the cows dress up for Lucia celebration as "four-legged maidens" with glitter on their head.[54] Or they are "teenage broads" wishing a nice weekend[55] or posing for a group photo.[56]

50 *Mitt liv som bonde*, January 28, 2022, https://www.instagram.com/p/CZSLZIpIxYu/.

51 *Mitt liv som bonde*, October 6, 2020, https://www.instagram.com/p/CGBA7BxJJ3d/.

52 *Bondbönans blogg*, December 19, 2020, https://www.facebook.com/Bondbonansblogg/posts/pfbid037F6dMRNT8wfapt2X8JU5s4nUbSmAsBcBf8PeU2rVNnwHtXC6LSnGhWt6sUNqNuoDl.

53 Margo DeMello, *Animals and Society: An Introduction to Human-Animal Studies* (New York: Columbia University Press, 2012).

54 *Mitt liv som bonde*, December 13, 2020, https://www.instagram.com/p/CIvrvUrpzRk.

55 *Mitt liv som bonde*, February 1, 2020, https://www.instagram.com/p/B8BKJTKpaZH/.

56 *Mitt liv som bonde*, September 29, 2020, https://www.instagram.com/p/CFusttjpQ2h/.

Anthropomorphism is a complex phenomenon, blurring the human-animal boundary, often with promises of a greater understanding of animals as thinking and feeling subjects of life. The creation of emotional and self-conscious animal subjects renders the distinction between other animals and humans hypothetically contestable and opens possibilities for less exploitative relations. However, the behaviour consequently encouraged by these postings of farmed animals in social media (buying and eating other animals) serves to tacitly reinforce the boundaries between humans and animals, whose only real value in the end lies in their body parts and bodily fluids.[57] The farmers' social media accounts do not dismiss the fact that animals are sentient beings, but uses this knowledge to further their narrative, inventing suitable thoughts and feelings for the animals that help downplay any ethical conflicts related to them being farmed. The anthropomorphisation taking place means that what is happening is not an inability to see the farmed animals as agential beings, but the outcome is exactly that. The accounts ascribe the animals with a human anthropomorphised agency, overwriting any real agency these animals have as animals.

Conclusion

With limited access to farmed animal spaces, the majority of people in the industrialised western world have little experience of farming practices other than the idyllic representations of green pastures with free-range, happy, and content animals that they get from food advertising or from social media accounts promising real views into the everyday lives of farmed animals. The allure of social media lies in how it seemingly provides an authentic view into the lives and realities of others, whether those others are human or animal. The farmers' accounts in social media are presented as windows into the everyday life of the animals in Swedish agriculture, but much like humans presenting their everyday life in social media, some things are exaggerated, and others left out. The animals' everyday life in green pastures is for example often the centre of attention on the accounts, despite the reality that, for the vast majority of farmed animals, this idyllic rural setting is fiction.

The social media accounts also promote a certain type of relationship between humans and animals, in which what is defined as the ethical problems of animal production/consumption is that modern consumers are disconnected and unaware of the realities of food production. In contrast to this stands the ethically

57 Glenn, "Constructing Consumables and Consent."

aware animal farmer, seemingly providing consumers with a transparent view into animal farming. As noted previously, this focus, and the assurance of care for the animals can be seen as ways to communicate with concerned consumers, providing those who are uneasy with the modern agricultural production a justification to continue consuming animal products.

On one level, the accounts represent farmed animals as individual subjective beings, the very thing that animal rights activists often are calling for the media to be doing. However, as has been shown in this chapter, this personalisation and individualisation takes on another meaning, one that works to further enable the exploitation of animals.

For the animal agricultural sector, the animals on the Facebook and Instagram accounts are tools for economic purposes. The animals' human-ascribed emotions are harvested to create an image of a compassionate animal production with happy animals. The animals are there as someone to be laughed at, similar to the silly and whimsical cats in Internet memes. Thus, farmers' accounts on social media can be understood as a way for the animal agricultural sector to use animals not only as physical laborers, but also for an emotional form of labour. Emotional labour has been defined as "the management of feeling to create a publicly observable facial and bodily display," something that "requires one to induce or suppress feeling in order to sustain the outward countenance that produces the proper state of mind in others."[58] When farmed animals are concerned, it is difficult to know of their own management of feelings. However, it is not farfetched to assume that they are not voluntarily behaving like humans want them to. Rather, they have their feelings managed by humans, and the premise of these humans' social media accounts is to spectacularly visualise the performance of animals, exploiting the emotional qualities of the animals and the relationships formed in the encounters between humans and animals.

58 Hochschild, *The Managed Heart*, 7.

Carin Martiin

13 Keeping dairy cattle: A matter of scale?

Introduction

An understanding of dairy cows as "machines" was referred to as early as 1859 by Professor Hjalmar Nathorst, a Swedish animal husbandry expert, who also likened cowsheds to "factories." In these factories, the means of production was transformed into milk by "living machines." A similar perception of dairy cattle can be found in a farm magazine published in 1898, which repeats the parable between dairy cattle and machines with positive associations and intentions.[1] Despite these nineteenth-century references to dairy cows as machines and cowsheds as factories, the following study shows that it would take almost 150 years before industrial dairy farming came to form an ordinary part of Swedish agriculture. Hence, this chapter examines Swedish dairy farming from the late nineteenth century to the early twenty-first century.

The focus in this chapter is on scale: from one or two cows among the rural poor in late nineteenth- century Sweden, to contemporary herds with up to a thousand dairy cows. A study is undertaken vis-à-vis how scale may have influenced the contact between the dairy cow and her keeper, which in most cases was the farmer him/herself, or other members of the farm household. Attention is paid to the broader context in which the changes in scale took place. It is posited that scale is influential on human-animal contacts, with such contacts being positive for both people and cattle. Moreover, it is asserted that it is easier to maintain closer relations with five rather than 50 dairy cows. In herds of more than a thousand dairy cows, the combination of little time devoted to each animal and the large number makes it almost impossible for the farm worker to recognise the animals as individuals.[2] It is argued that the level at which scale compli-

1 Hjalmar Nathorst, *Husdjursskötsel* (Örebro, 1859); *Lantmannen* 17 (1898), 264. On the perception of dairy cattle as machines in a Finnish context, see Taija Kaarlenkaski, "Living Machines with Gentle Looks: Materiality and Animal Body in Modernizing Finnish Animal Husbandry," *Humanimalia* 11 (2019): 42, 53.

2 See Taija Kaarlenkaski and Annika Lonkila, "In Search of Invisible Cows: Collaboration, Resistance and Affection in Human-Animal Relationships on Contemporary Dairy Farms," *Ethnologia Fennica* 47 (2020), 45. This article draws on interviewees, who talk about their favourite animals as individuals. In the dairy farming magazine *Husdjur*, an individual dairy farm was highlighted each month. In these feature pieces the individual farmer was interviewed about the production process and her/his life as a dairy farmer. They were also asked whether they had a particular favourite cow.

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cates contacts with cattle cannot be given in exact numbers; human-animal relationships are hardly directly linear with scale. Other aspects are also important, such as how the animals are being milked; the time spent in the cowshed in general, and closeness to the cattle in particular; individual interest in contact with the animals; and the degree of manual work versus the use of machinery and automatic equipment.

Factory farming today can be understood in line with the definition in the *Cambridge Dictionary*: "A system of farming in which a lot of animals are kept in a small closed area, in order to produce a large amount of meat, eggs or milk as cheaply as possible."[3] According to the author's earlier attempt to define industrial animal farming, this is not just a matter of scale, but also about being located almost anywhere, such as factory-like buildings or feedlots, to which feed and other products are delivered from almost any place, irrespective of local conditions.[4] In this chapter, a modified version of this definition is used, whereby factory-like dairy farming is understood as a system of farming in which a large number of dairy cattle are kept in a closed area, indoors and/or outdoors, so as to produce large volumes of milk as cheaply as possible with minimum manual work per animal. Moreover, human labour is to a great extent replaced by technologies. In this chapter it is argued that these combinations contribute to an understanding of cattle as 'animal bodies,' rather than as individuals.

Special attention is paid to the anonymity of the dairy cow in industrial animal farming. To what degree does the keeper recognise her as an individual, in which she is perceived in terms of her unique looks, behaviour and interactions? Moreover, how is the mutual trust between the keeper and the dairy cow maintained? These kinds of issues are often subliminal, not often noted, and are not written down. Our possibility of reaching a definitive conclusion through historical sources are thus limited. In this study, various kinds of indirect sources, such as scale, were used, and were, to some extent, complemented by contemporary studies to indicate the relevance of interpretations of human-animal relationships in the past.

The approach and method employed in this chapter stem from the author's two-fold position in the field of dairy farming. On the one hand, she has far-reaching practical experience in the field, and, on the other hand, she has also undertaken decades of academic research in agrarian and economic history. As regards animal factories and scale, the two perspectives have generated a conclu-

3 "Factory farming," *Cambridge Dictionary*, accessed April 19, 2022, https://dictionary.cambridge.org/us/dictionary/english/factory-farming.

4 Carin Martiin, *The World of Agricultural Economics* (Oxford and New York: Routledge, 2013), 142–143.

sion that posits that human-animal relations are valuable, and that minimised or even non-existent human-animal contact is negative, all else being equal. Accordingly, it is argued that industrial animal farming contributes to forming a perception of farm animals as machines. This tends to lead to a lack of respect for the animals and for the intrinsic mutual values of human-animal relations.[5] A second conclusion, with reference to the Swedish context, is that an understanding of scale and industrial dairy production requires historical analysis, and that the two have not always been identical. The present average herd size is 109 in Sweden and 315 in the United States, and the biggest herds in the United States are more than ten times bigger than the biggest ones in Sweden.[6] It would be a mistake to claim that the animals live under equal conditions in herds of 1,500 or 15,000 dairy cows, but the concept is similar, based on automatisation and as little manual work as possible.

This study was inspired by recent (and remarkable) scaling-up processes in Swedish dairy farming, which called the author's attention to how the size of the dairy herd may influence human-animal relationships. The sources used in this study combine academic research, official statistics, textbooks and magazines about dairy farming practices. The next two parts of this chapter account for Swedish dairy farming in a wider context before and after the mid-twentieth century. In general, substantial changes in scale, technologies, and the number of herds has been a factor since the mid-twentieth century, but extremely dramatic changes in the direction of industrial dairy farming did not take place until around the turn of the twenty-first century.

5 See, for example Kathryn Gillespie, *The Cow with Eartag #1389* (Chicago: University of Chicago Press, 2018); Nathalie Hostiou et al., "Impact of Precision Livestock Farming on Work and Human-animal Interactions on Dairy Farms. A review," *Bioscience, Biotechnology and Biochemistry* 21 (2017): 5.

6 "Statistics," ICAR, accessed August 16, 2023, https://my.icar.org/stats/list; "Våra kor," Vadsbo, accessed August 16, 2023, https://vadsbomjolk.se/djurhallning/; "Wapnö Djur," Wapnö Gård, accessed August 16, 2023, https://www.wapnogard.se/djur/; "Oregon is home to the largest dairy in the nation, here's a look inside," Youtube, accessed August 16, 2023, https://www.youtube.com/watch?v=cUsocHxIBdQ.

Dairy cows almost everywhere until the mid-twentieth century

Most Swedish farms and holdings were typically small until the mid-twentieth century. In 1944, as many as 54 percent of all farm units had less than five hectares of arable land, while less than two percent had more than 50 hectares of arable land.[7] In the late nineteenth century and early twentieth century most herds were maintained for multifunctional purposes within cottages and small holdings. They were utilised for milk, meat, and manure and represented – in both social and cultural terms – a capital asset in reach of the rural poor. To have at least one dairy cow was something of a necessity in the Swedish countryside.[8] In 1927, as many as 98 percent of all farm units in Sweden had at least one dairy cow, and 92 percent in 1949.[9] As Table 13.1 demonstrates, the number of dairy cows per farm changed very little between 1927 and 1951, with only a slight size increase from five to 20 hectares of arable land. The average herd size for all dairy farms was not more than 4.5 dairy cows in 1927, and 4.6 in 1951.

Table 13.1: The average number of dairy cows per farm size category. *Jordbruksräkningen år 1927*, Table 12 and 80; *Jordbruksräkningen år 1951*, tables 2 and 12. *Official Statistics of Sweden* (Stockholm: Statistics Sweden).

Farm size categories (arable land, hectare)	Average number of dairy cows per farm, 1927	Average number of dairy cows per farm, 1951
0.26–1.0	1.0	0.5
1.1–2.0	1.8	1.3
2.1–5.0	2.8	2.8
5.1–10.0	4.5	4.9
10.1–20.0	6.8	7.2
20.1–30.0	9.8	9.7
30.1–50.0	13.7	12.3
50.1–100.0	22.9	18.3
101.0-	53.0	41.0

7 *Statistical Yearbook of Sweden* (Stockholm: Statistics Sweden, 1946), Table 73, 86–87.

8 Carin Martiin (Israelsson), *Kor och människor. Nötkreatursskötsel och besättningsstorlekar på torp och herrgårdar 1850–1914* (PhD diss., Swedish University of Agricultural Sciences and Hedemora: Gidlunds, 2005).

9 *Official Statistics of Sweden, Arable farming and animal husbandry* (Stockholm: Statistics Sweden, 1949), 35.

The widespread use of dairy cattle throughout Sweden, alongside the fact that most Swedes still lived in the countryside until 1945, means that many people were familiar with dairy cows, with their mooing, smell, and other characteristics.[10] People and dairy cattle were very familiar with each other, although it cannot be taken for granted that all human-animal relationships were exemplary. Working with cattle was more-or-less a necessity rather than a choice for most Swedes, and far from all people were happy to spend mornings and late afternoons in dark and damp buildings, making sure the dairy cows behaved, and guarding open milk pails from flies and dirt. Others enjoyed the welcoming sounds of familiar animals; they may have called their names, tended to their particular appetites and had a little chat with each of them during the milking process.

Cattle husbandry was usually the responsibility of women. The tasks associated with such husbandry were perceived as something between household and farming responsibilities, particularly within small holdings and farms. The feeding and watering of the animals could be combined with fetching firewood and potatoes, along with caring for children, elderly people, new-born calves, and sick animals. Despite poor material conditions, hard work, and a scarcity of time, the human-animal relationships may have been close, given the small number of animals and the frequent and repeated contact with the same individual cows from early morning to late evening.[11]

Somewhat better conditions were found at small and mid-sized farms, with herds of about four to eight dairy cows. Details varied according to socioeconomic conditions, region, and the desire to produce milk for profit, among other things. As a matter of fact, only 61 percent of the total milk production was supplied to dairy plants in 1938, whereas as much as 39 percent was used in kind, for human consumption and animal feed. Indeed, to varying extents it was used for direct sale, as well as for farm-house butter and cheese making.[12]

The greatest contrast in living and working conditions could be found at some of the comparatively limited number of estates and other large farms in Sweden. At these sites, the opportunity was taken to develop dairy farming, which resulted in the discernible increase in butter exports from 1860. The idea of making a profit from butter exports was often accompanied by the ambition to demonstrate modern agriculture, as well as to develop a large farm as an exemplary model. Luxury estate cowsheds, with high ceilings, large windows, good air

10 *Historical Statistics of Sweden, Part I* (Stockholm: Statistics Sweden, 1969), 66.

11 Martiin (Israelsson), *Kor och människor*.

12 *Statistical Yearbook of Sweden* (Stockholm: Statistics Sweden, 1943), 99, 101.

quality, and rows of milk producing cattle, were most probably in the mind of the aforementioned Hjalmar Nathorst when he wrote about cowsheds as "factories" and dairy cows as "living machines."[13] In this context, neither the scale nor the reference to factories entailed a comparably poor life for the cattle. On the contrary, the combination of ideas that were employed to create excellent model farms with exemplary grooming, feeding and good milk yields from beautiful animals, was proudly demonstrated at cattle exhibitions and stood in stark contrast to ordinary living conditions of farm animals across the Swedish countryside at the time.

The socioeconomic inequalities in rural Sweden diminished over time, as did the previously described differences in dairy farming. This included a reduction in inequalities in the living conditions of dairy cattle. Urbanisation and industrialisation contributed to improved standards of living and more nutritious diets, which favoured the dairy sector. In addition, the impact of farmers on society increased. For example, they exerted influence on members of the Swedish parliament (*Riksdag*), as well as through the two national farmers' unions, and through the development and strengthening of various kinds of farmers' cooperatives, not least dairy cooperatives. Increased income from the sale of milk also made it possible to improve the living conditions within farmers' households, as well as for the cattle, who were better fed and were consequently able to yield somewhat more milk. The average milk yield increased modestly, from an average of 2,176 kilos per dairy cow per annum in 1927 to 2,852 kilos in 1959 (an average of 21 kilos more per year, in comparison with 109 kilos more per year from 1960 to 1995).[14] Modest milk yield increases and the maintenance of small-scale farms (Table 13.1) allowed for many dairy suppliers and dairy cows to meet the needs of the Swedish population of six million in the early 1920s and seven million in 1950 in terms of milk, butter, cream and cheese. The number of dairy suppliers peaked at 271,000 in 1946, and the number of dairy cows at two million in 1930.[15]

At the same time, dairy farming became something of the backbone of rural Sweden, in terms of being of greatest importance for many farm households. With about half of the total population of Sweden living in the countryside, the authorities were keen to avoid having the countryside fall behind and saw dairy

13 Ulrich Lange, *Om lantbrukets bebyggelse och arkitektur 1600–2000* (Stockholm: Nordiska museet, 2011), 107; Martiin (Israelsson), *Kor och människor*, 66.

14 *Statistical Yearbook of Sweden,* volumes from 1930 to 1997. Calculated as the total Swedish milk production divided by the total number of dairy cows. During this time all cows were perceived as dairy cows. In general, specialised beef cattle did not come into use until the second half of the twentieth century.

15 *Statistical Yearbook of Sweden*, all volumes, 1914–2014.

farming and dairy consumption as a win-win business that created work and income for farmers and improved the diets of consumers all over the country. The fact that dairy farming required a lot of work year around was seen as positive, as were the large number of small-scale dairy herds that contributed to the livelihoods of the rural population.[16]

From the 1920s, an increasing share of Swedish farm holdings had access to electric lights and/or running water in cowsheds. Yet, with the exception of these facilities, most cowsheds involved a great deal of manual work, including tasks related to milking, the handling of manure and feed and the carrying of hot water for cleaning milk utensils.[17] Milking machines appeared in a small number of the largest dairy herds in the 1910s, with a breakthrough taking place in the largest barns in the 1930s. From the 1940s, milking machines became common in ordinary herd sizes, with an average of five to seven dairy cows.[18] The milking machine required close physical human-animal contact, although it involved a somewhat shorter time than when the cows were milked by hand. Thus far, the aforementioned ideas of the mid- and late nineteenth century vis-à-vis dairy cows as machines had not been realised.

A good example of how one can examine and explain the life of farm animals in Sweden in the 1920s can be found in a schoolbook for 10 to 12-year-old children. The pupils were probably very familiar with ordinary dairy husbandry, which means that the text had to be realistic for both children and their parents. Hence, the authors provided a reminder rather than new instruction to children about the happiness of finding a healthy new-born heifer calf when opening the door to a cowshed early in the morning in spring.[19] The feeding of a little calf, and its life as a young heifer during the first two years of its life was then described, followed by instructions on how to feed a lactating cow, with parallels being made to the human kitchen:

16 *Betänkande i näringsfrågan. Avgivet av befolkningskommissionen, SOU 1938:6,* (Stockholm: Ministry of Health and Social Affairs, 1938), 39, 40, 42.

17 Carin Martiin, "Rural Electrification in Sweden: A Comparison," in *Transforming the Countryside: The Electrification of Rural Britain,* ed. by Paul Brassley, Jeremy Burchardt and Karen Sayer (London and New York: Routledge, 2017), 168–173; *Jordbruksräkningen 1944,* (Stockholm: Statistics Sweden, 1946), 432–433.

18 *Statistical Yearbook of Sweden* (Stockholm: Statistics Sweden, 1951), Table 71 and 73; Mats Morell, "Agriculture in Industrial Society 1870–1945," in *The Agrarian History of Sweden,* ed. by Janken Myrdal and Mats Morell (Lund: Nordic Academic Press, 2011), 197; *Jordbruksräkningen 1944,* 415; *Jordbruksräkningen 1951* (Stockholm: Statistics Sweden, 1956), 433.

19 J. R. Högberg and Nils Helger, *Lärobok i lanthushållning II, Husdjursskötsel* (Uppsala: J. A. Lindblads förlag, 1923), 75–76.

> When we have three dishes for dinner, we use to begin with soup, then meat, and finally dessert. If the same order is followed in the barn, the dairy cows will first be given some juicy feed, which corresponds to the soup, then grains and other concentrated feed, and finally hay and straw.[20]

The quotation above indicates the care needed for both people and animals and pays attention to the similarities in the needs of everybody on the farm. One can also discern signs of closeness between the people and the animals, who more-or-less shared their everyday lives.

Scaling up from the mid-twentieth century

It is easy to romanticise the 1950s, especially in light of increased economic pressure, mechanisation, and the efficiency requirements of the decades to come. A more realistic interpretation of this decade is to see it as an era between the previously described period of modest changes, and the scaling-up and changes in methods and aims that came to the fore from the 1960s. The 1960s to the mid-1990s were typically characterised by a gradual expansion of the family farm in Sweden.

Labour efficiency, as espoused by the Social Democratic Party, was a fundamental political idea for Sweden's post-war economic development. The goal was to make fewer people produce more per hour. In the agricultural sector it was envisioned that this would be achieved through time-saving technology and higher yields. This was to occur without increasing the total national production, which was considered as already being sufficient. The changes were to be managed within family farms, with only a limited number of extra employees. These principles were ratified by the *Riksdag* in 1947, which soon led to greater pressure to achieve efficiency and structure. This policy was to last until the 1990s. Over the years these processes of change were pushed forward as an interaction within the political sphere, available farm technologies and economic circumstances, such as the general situation of the labour market.[21]

The changes that took place were drastic: 268,000 dairy suppliers in 1950 was reduced to only 25,000 by 1990 and only 3,000 in 2020. During the same timeframe, the number of dairy cows was reduced from 1.6 million in 1951 to 0.65 million in

20 Högberg and Helger, *Lärobok*, 76–77.

21 *Government Bill* 1947:75 and 1967:95; Lennart Schön, *En modern svensk historia. Tillväxt och omvandling under två sekel* (Stockholm: SNS förlag, 2012), 427.

1990, and 0.3 million in 2020.[22] In addition, the dairy market faced almost continuous problems in regard to an imbalance between supply and demand, most often with surpluses rather than shortages. These kinds of problems became increasingly visible in the 1980s and escalated from the 1990s, being frequently reported in the magazine *Husdjur*. Taken together, many dairy farmers were put under heavy economic pressure, but also felt the strain of a growing number of rules and controls, and increased attention from the media and consumers with regard to animal welfare, antibiotics, and harmful substances in feed concentrates. Moreover, some dairy farmers suffered from loneliness during their working day as other family members commuted to other jobs to support the farm and household economy.[23]

A sense of pessimism was particularly widespread in the 1960s, when an average of 32 dairy herds disappeared every day, even though the farmers concerned may have wanted to keep the dairy herd. Some dairy farmers may have been happy to start a new life in an urban area, while others found it extremely difficult to send their animals to slaughter, to empty the barn, and maybe also to leave the farm; they hesitated and waited as long as possible to take such a decision. Some farmers may have decided to carry on milking despite these pressures out of a sense of love for their dairy cattle, which, nonetheless, was no guarantee of exemplary tending, and for their way of life. There may have also been elements of pride in not giving up.[24]

Most dairy herds that were relinquished were small, which contributed to an increase in average herd size over time. What is more, many of the remaining dairy herds were enlarged, as a means of safeguarding the farm from the ongoing process of the closure of barns. The enlarged herd was often managed by the same labour force, typically the farm couple, with the help of investments in time-saving equipment and less time per farm animal. Such investments, including the automatic handling of manure, certainly saved time on individual farms. At the same time, these investments increased the drive to further enlargement.

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22 *Statistical Yearbook of Sweden* (figures for 1950 and 1990); "Jordbruksverkets statistikdatabas," National Swedish Board of Agriculture, (figures for 2020), accessed April 21, 2022. https://statistik.sjv.se/PXWeb/pxweb/sv/Jordbruksverkets%20statistikdatabas/?rxid=5adf4929-f548-4f27-9bc9-78e127837625.

23 From the author's ongoing study about Swedish dairy farming, 1980 to 2020, part of the project *"Hållbar produktion och konsumtion av mjölk"* ("Sustainable production and consumption of milk"), based at the Swedish University of Agricultural Sciences.

24 Regarding the Swedish rural exodus during the second half of the twentieth century, see Iréne Flygare and Maths Isacson, *Jordbruket i välfärdssamhället: 1945–2000* (Stockholm: Natur och kultur/LT, 2003). For a shorter version in English, see Iréne Flygare and Maths Isacson, "The tensions between modernity and reality: 1945–2000," in *The Agrarian History of Sweden 4000 BC to AD 2000*, ed. by Mats Morell and Janken Myrdal, 214–256 (Lund: Nordic Academic Press, 2011).

Larger herds and investments made dairy farming more specialised and intensive. Thus, more rather than less time was actually spent in the cowshed. According to time and motion studies, a dairy herd with ten cows in 1962 required 1,160 hours of work per year (116 hours per dairy cow and year, or 19 minutes per day), while twenty dairy cows in 1972 required 1,820 hours of work per year (91 hours per dairy cow and year, or 15 minutes per day).[25] Hence, farm employees may have been around cattle for a longer amount of time per day, but less time per individual cow. The examples of the worktime per dairy cow in the early 1960s and 1970s appear generous compared to later decades and the present.

Despite these changes and the enlargement process of the average herd size, the scale was remained at modest levels. As shown in Figure 13.2, the most common herd size in 1970 was between four to nine dairy cows, compared to 10 to 24 cows in both 1980 and 1990. Even in 1990, the size of the average herd made it possible for family members to recognise and know the names of their dairy cows, and maybe also their personalities. The drawing in Figure 13.1 demonstrates how many farmers valued relationships with their dairy cows. The drawing was first published in a widespread coursebook on animal husbandry that was published in 1958 and was intended for study circles, basic courses at agricultural schools, and rural domestic schools (*lanthushållsskolor).* The drawing was still included in the fourth edition of 1969, at the close of a decade that was notorious for its emphasis on rationality and efficiency at the expense of animal welfare. The continued inclusion of the drawing indicates that the publisher, which was owned by *Lantbruksförbundet*, one of the two Swedish farmers' unions, was aware of the continued value readers placed on good relations with the cattle, despite the contemporary emphasis on rationality.

The figure highlights the changes in the number of dairy herds between the 1970s and 1990s. The two graphs clearly demonstrate the route from small-scale to something like industrial scale in Swedish dairy farming that took place within the space of three decades. Many of the smallest herds still remained in 1970, even though the process of structural rationalisation had been set in motion. The process not only implied the closing down and culling of large numbers of dairy herds, but also the enlargement of some herds. As an example, a farm with twenty dairy cows in 1970 may have expanded to 30 in the 1980s and to 60 by 1990, thus appearing in different size categories over time.

According to Figure 13.2, herds with less than ten dairy cows were almost phased out by 1990. By this time herds of between 10 to 24 and 25 to 49 dairy

25 *Databok för driftsplanering*, Table 2–20,1 (Uppsala: The Agricultural College of Sweden, 1963); *Databok för driftsplanering*, Table 207 (Uppsala: Swedish University of Agriculture, 1980).

Figure 13.1: Drawing in a basic coursebook on animal husbandry. The text states: "Do you see the moon, Rosa? Be familiar with the animals." Beside the drawing a comment says: "Stay a while and socialise with the animals, so that they get to know and trust their keeper." A. Helmenius, K. Rydå, and G. Woldmar, *Våra husdjur* (Stockholm: LTs, 1969), 77.

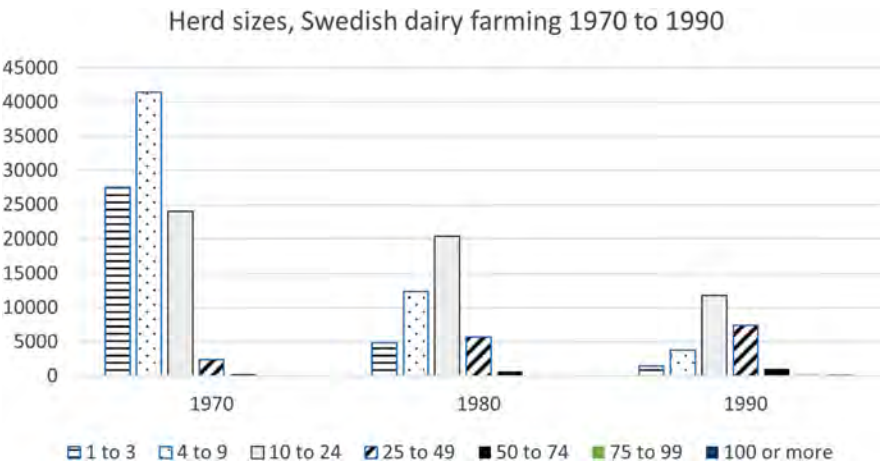

Figure 13.2: The distribution of herd size categories in Sweden in 1970, 1980 and 1990. Sources: Official agricultural statistics.

cows were the most common. Herds larger than this were still marginal. In sharp contrast, Figure 13.3 demonstrates the changes that have taken place since the turn of the twenty-first century, which took the form of huge leaps, such as direct increases from 60 to 200 dairy cows. Such a strategy contrasted with the previous policy of more gradual increases. At the same time, it required huge investments

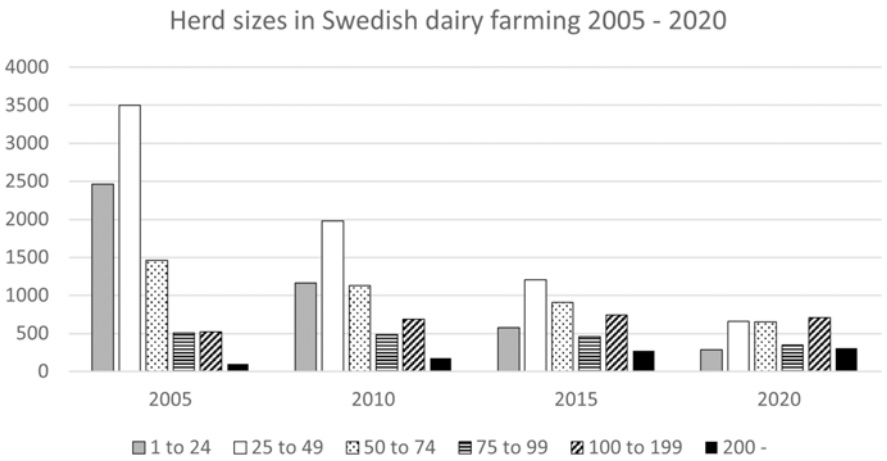

Figure 13.3: The distribution of herd size categories in Sweden between 2005 and 2020. Source: Official agricultural statistics.

in buildings and technical equipment, such as automatic milking and feeding. As can be seen in Figure 13.3, herds with at least 200 cows were the only category that increased between 2015 and 2020.

The way in which the expansion in the Swedish cattle industry was carried out may have influenced the extent to which one can speak of losses in terms of human-animal relationships. Recent interviews with Finnish dairy farmers include an example of what a farmer described as the maintenance of good relationships in a herd of 160 dairy cows: "our cows are still individuals although there are so many of them [. . .]. [W]e call our cows by names, we know their characters, they are so different. [Y]ou get to know them one by one [. . .]."[26]

One way to expand a herd was to structure it around internal recruitment. This involved a gradual process that took place over several years in which heifers were bred. This could make it somewhat easier to know the animals, compared with an enlargement that was managed through large-scale purchases of heifers and cows that could arrive at any time. With hundreds of new heifers and cows arriving at the same time it is likely that it became increasingly difficult for the owner to view the cattle as individual, at least during the first months or years, when the farmer and his/her staff could be extremely busy making technology, animals and everything else get going. The author's more general understanding of human-animal relationships in contemporary large dairy herds in

26 Kaarlenkaski and Lonkila, "In Search of Invisible Cows," 44.

Sweden is in line with Kaarlenkaski and Lonkila, who state that even though emotional relationships with each and every cow in very large herds are not possible in general, some cows may "stand out and receive special attention," for example being "over-friendly," or having a special character that can even make them a favourite of the farmer.[27]

Factors other than scale that may have influenced the relationship between cattle and farm workers

During the majority of the 150 years examined in the present study, dairy cattle in Sweden constituted one of the most important food producers and were of greatest value to arable farming. On the one hand, nutrients were recycled via manure, and, on the other hand, the cultivation of grass and clover for hay (and silage during the latter parts of the period in question) contributed to a more sustainable crop circulation system in comparison with earlier techniques. Moreover, the animals were of key importance to the farm economy. The maintenance of a dairy herd was far from being a mere hobby. Neither did the human-animal contacts constitute a leisure pastime, but should rather be understood as something that has taken place in parallel with ordinary practical work. This does not exclude the possibility that communication with the animals, as a herd and individually, may have contributed to an extra quality in everyday life. The merger with practical work means that working methods could influence human-animal relationships. In general, Swedish dairy farming was characterised by intensive manual work and accompanying frequent physical human-animal contact until the mid-twentieth century. Thereafter, much of the physical work was gradually replaced by machinery powered by fossil fuels or electricity, even though a morning spent in a barn still included several kinds of manual work and frequent physical contact with the cows. The following reasoning highlights the contact-intensive work in the barn, which was of greatest importance to human-animal relationships in the past. Yet, in recent decades more or less automatised processes have taken hold, especially in terms of the increasing share of very large dairy herds.

Beginning with milking, this has been one of the most intensive kinds of physical contact between the comparatively large cow and the milker. Milking re-

27 Kaarlenkaski and Lonkila, "In Search of Invisible Cows," 44.

quires mutual trust between the milker and the animal; it can hardly be successful if undertaken with violence or the threat thereof. In the case of the history of Swedish dairy farming, milking by hand was usually seen as a female task, whereas the introduction of machine milking between the 1920s and the 1950s increased the male presence in barns.[28] According to on-farm interviews conducted by journalists from the magazine *Husdjur* from 1979, the male farmer often spoke of the farm in general, while the daily work in the barn was often described as the joint responsibility of the farm couple. The milking machine changed this process, but still required a collaboration between the cow and the milker. As in earlier times, the udder and teats needed to be cleaned and massaged by hand, before turning on the noisy machine, which the dairy cow had to bear for some minutes. Half a century later, automatic milking, or "robot milking" was available. This largely changed the situation of the dairy cow as it could be milked without the presence of a human. It effectively learned the language of the machine rather than of the farm worker.[29]

The feeding of the herds has been another means of establishing good contact and making the animals react to people in a positive way. The replacement of manual feeding by automatic systems began in Sweden in the 1980s as a way to manage more cattle. Most likely, some of the human-animal relationships were lost when feeding switched to a computerised machine or to a tractor with a huge feed wagon. Manual grooming constitutes a third example of contact-stimulating work. Recommendations from 1869 and 1913 emphasise grooming as being important for the well-being of the animals, and necessary for temperature regulation and the excretion of residual products through the hide. Similarly, the earlier quoted schoolbook from 1923, emphasised the positive impact of grooming on the well-being of the animals. However, by the 1950s, the time-consuming process of manual grooming began to be questioned. In a textbook from 1955, the authors posed the question of how much time should be spent on grooming? They answered by stating that this depended on the plan of the barn, and on the kind of straw that was used as bedding for the cattle. Moreover, it was said that grooming could be omitted in well-managed housing systems that allowed the cattle to roam. However, this system was rare by this time. A textbook for agricultural schools, published in 1974, gave contradictory messages. On the one hand, it stated that the skin of cattle required grooming, but on the other hand it stated that the possibilities for this depended on the availability of time. Grooming was

28 Martiin (Israelsson), *Kor och människor*, 241–253.

29 The early stages of automatic milking, with reference to Canada, were discussed in *Husdjur* 3 (1983): 54–55. The breakthrough in Sweden would, however, take more than two more decades.

still mentioned in a textbook published in 1979, but not at all in a textbook from 1997.[30]

Furthermore, the manner in which dairy cattle were housed could also play a role in human-animal interactions. Even though systems in which cattle were tied-up have various drawbacks, they contribute to more human-animal contact, because it is "built-in" in the routines. In modern housing systems of today that allow cattle to roam the animals are able to keep a distance from people, who direct their routines at some distance, often digitally, rather than through direct physical contact.[31] Harmonious or unharmonious atmospheres may occur in both tied-up and roaming housing systems. The atmosphere among a dairy herd can, it is suggested, be understood as a combination of material conditions and more subtle matters. This includes the effects of a stockperson's skills of observation and the interpretation of social signals within the herd, and the animals' more unintentional subtle signals, such as a small grimace in the face of an individual cow.[32] These kinds of skills, known as *koöga* in Swedish (having a good eye for cattle), contribute to a harmonic atmosphere. They also make the animals more relaxed. The degree of harmony is not directly related to the technical level of the barn. Thus, dairy cows "may be in a poor system technically, but may be content and under little stress if they have confidence in a good relationship with the person who tends them."[33] According to several interviews conducted with dairy

30 G. Swederus, *Handlexikon för Svenska Landthushållare* (Stockholm: B. Holmqwists förlag, 1869), 359; Edvard Nyström, *Nötkreaturens, fårets, getens och svinets ytterlära, afvelslära och hälsovårdslära, Lantbrukets bok 2* (Stockholm: C. E. Fritzes bokförlag, 1913), 531–534; Högberg and Helger, *Lärobok*, 81; Helmenius, Rydå and Woldmar, *Husdjursskötsel,* 201–202; Bjäresten et al., *Husdjursskötsel* (Stockholm: LTs förlag LTK, 1974), 42, 225; Danell et al., *Mjölk. Produktion och ekonomi* (Stockholm: LTs förlag, 1979) 42, 225; Bergsten et al., *Mjölkkor* (Stockholm: LTs förlag, 1997).

31 Dairy cattle in contemporary Sweden are usually kept indoors and are allowed to roam around. They are allowed outside during the day in the summer. Cows are supposed to move around in the barns and go to the milking robot (alternatively the rotary or parlour), as well as making their way to where food is and to rest in their stalls and to use self-grooming devices. The animals are identified electronically via contact with various kinds of equipment that are utilised for milking, feeding and the monitoring of health, etc. Being moved from a system in which they are tied-up in a barn to being allowed to roam around with as many as 40 other cattle could represent a great change for individual dairy cows.

32 Linda Keeling, "A Cow's Perspective: Cow Signals and 'Koöga,'" in *Kon, människan och världen – från urtid till nutid*, ed. by Marianne Elvander and Per Eriksson, *Kungl. Skogs- och Lantbruksakademiens Tidskrift* 162 (2023), 138–140.

33 Martin F. Seabrook, "The Psychological Relationship Between Dairy Cows and Dairy Cowmen and its Implications for Animal Welfare," *International Journal for the Study of Animal Problems*, 1 (1980), 295–298, citation 297.

farmers in the magazine *Husdjur*, it was common to find that some dairy cows found it difficult to manage the move from a tied-up stable to a much larger housing system with new technologies in which they could roam, but were faced with being part of a much bigger herd and enjoyed less human-animal contact. The farmers' strategies differed, from simply sending such cattle to slaughter, to allowing dairy cows with difficulties to adapt to the new environment and/or scale to remain in their old barn, where they were milked and tended almost as usual. This required extra work but resulted in the survival of individual cows.[34]

The concept of "avoidance distance" is used in animal science to indicate the animals' degree of trust to human beings. Such questions were less relevant in the past, when Swedish cowsheds were designed as tied-up systems with manually handled milking machines, as opposed to the current trend towards increasing the share of herds kept in loose housing systems with automatic milking, feeding, cleaning, and monitoring. Ebinghaus et al. measured avoidance distances, tolerance to tactile interaction, and expressive behaviour at different types of German dairy farms and found that these aspects were influenced by a stockperson's attitudes, as well as the quantity and quality of human-animal contact. The avoidance distance was understood as the animals' degree of trust, which was highly correlated to the intensity, quality, and continuity of human-animal contact, alongside the stockkeeper recognising individual cows and handling them with compassion.[35] Similar results were published by Weiblinger et al. and Ivemeyer et al., who stressed the impact of the amount of time spent with the animals, and a stockperson's ambitions and ability to identify the dairy cows as individuals.[36] These aspects could certainly be promoted by time-saving technologies, provided that this saved time is used to provide extra care for the animals. In reality, and with reference to the scaling-up processes in dairy farming that have been implemented since the mid-twentieth century, the saved time appears to have been swallowed up by other tasks, such as further expansion, while individual human-animal contact has been further downgraded.

34 *Husdjur*, primarily discussed in volumes 2004 to 2014.

35 Asja Ebinghaus, Silvia Ivemeyer and Ute Knierim, "Human and Farm Influences on Dairy Cows Responsiveness towards Humans – A Cross-sectional Study," *PLOS ONE* 13 (2018): 12.

36 S. Waiblinger, C. Menke and G. Coleman, "The Relationship between Attitudes, Personal Characteristics and Behaviour of Stockpeople and Subsequent Behaviour and Production of Dairy Cows," *Applied Animal Behaviour Science* 79 (2002): 195–219; Silvia Ivemeyer, Ute Knierim and Susanne Waiblinger, "Effect of Milkers' Attitudes and Behaviour on Cows' Avoidance Distance and Impact on Udder Health in Swiss Dairy Herds," in *Proceedings of the 5th International Conference on the Assessment of Animal Welfare at the Farm and Group Level*, ed. by T. Widowski, K. Sheppard, and Penny Lawlis (Wageningen: Wageningen Academic Publishers, 2011), 2.

Conclusion

Work with dairy cattle has long entailed close contact between the dairy cow and her keeper. The milking procedure in particular has required a far-reaching degree of mutual trust. Hence, human-animal relationships have formed an important part of everyday life in the Swedish countryside, where dairy cows were found almost everywhere until the mid-twentieth century. Most herds were small until the end of the twentieth century, far below levels that may be considered as critical regarding the potential for individual human-animal contact. What we see at the moment is a dramatic increase in scale. This has taken place whilst about 99 percent of the herds have disappeared since the mid-twentieth century, resulting in far-reaching changes in methods of production, increased dependency on functioning technologies and financing. This has also been accompanied by changes in the relationship between the dairy cow and her keeper.

In this study, it is assumed that good contact and mutual trust between the dairy cow and her keeper has an intrinsic value in itself and for everyday work in the barn. Moreover, it is assumed that the size of the dairy herd is an important factor in the ability to develop relationships between animals and their keeper(s). It is shown that the ideas of the mid-nineteenth century about animals as machines and cowsheds as factories did not become a reality until a century and a half later. Up until the 1970s, Swedish dairy farming would be characterised by its small-scale. Industrial animal farming would not be substantially developed until the turn of the twenty-first century. Today herd sizes have increased to over a thousand dairy cows on some farms, plus young cattle, making up to two thousand heads, with carefully registered numbers, but anonymous faces. In these cowsheds, a large number of animals are kept by a minimum of manual labour but generously equipped with machinery and electronic systems. From the perspective of human-animal relationships the cattle may be assumed to be more-or-less devoid of identity at this herd size. Individual contact and trust could certainly be promoted by time-saving technologies: the extra time accrued by such technologies could be used for extra care of the animals. In reality, and with reference to the scaling-up processes in dairy farming that has taken place in Sweden since the mid-twentieth century, the time that has been saved appears to have been swallowed up by other tasks, such as further expansion in the almost continuous process of increased scale. However, small-scale farming methods should not be romanticised. During the early decades of this study, in particular, many dairy cattle lived their lives in poor material contexts in which suffering induced by bad feeding and housing may have overshadowed other more positive aspects.

Taina Syrjämaa

Epilogue

Animal industries are highly problematic in many ways. The various branches of this huge global business sector directly influence billions of farmed animals, whose births, lives and deaths it aims to control in order to produce profit for humans. Simultaneously, the indirect effects are tremendous on wild animals, whose territory is continuously diminishing. Whilst – from a short-term perspective – humankind may consist of (seeming) winners and losers, the non-human animals are all victims of a system based on violence and exploitation. Yet, together we all suffer from dramatically deteriorating living conditions as the climate crisis and the current wave of extinction, forcefully underpinned by extending animal industries, transform and destroy our shared planet. This alone calls for a critique of both the seemingly progressive nature of animal industries and the beliefs that these industries are an unavoidable part of creating welfare for nations.

This book has explored the intriguing and interrelated questions of why and how such devastating industries have developed and expanded into their current state and how destructive consumption practices of industrial animal-based products have become so deeply rooted in daily living. The book has delved into the history of animal industries by choosing a long-time scale from the 1860s onwards and by examining the Nordic countries, especially Finland, Norway and Sweden. Denmark has been an important actor in international markets of animal-based products for a long time, and thus has a rather different – and also internationally better known – history than other Nordic countries.

The book has shown how animal industries have not grown as a self-evident, automatic process, but have been in many ways intertwined with such huge and complex phenomena as nationalism and the overall modernisation of societies. These developments also continue to have an impact on the present-day discussions, as, for example, domestically grown animal-based products are marketed as the most responsible consumer choice, or technological innovations are used to further intensify the use of non-human animals in production and to optimise the non-human animals themselves for the processes of production. The most remarkable example of this optimisation is breeding, which has changed the bodies of many farmed animal species, such as chickens, pigs and cows, to an extent that the bodies in themselves may cause welfare problems to the animals.

The case studies together uncover the historical and cultural features of animal industries and their historical roots. They extend much further in its history than factory farming, which currently is the most apparent feature of animal industries. The connection between animal industries and presumed human prog-

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ress and national wealth is glaring. Nordic countries, which were rather peripheral in the mid-nineteenth century in a global context and were not amongst the most rapidly industrialising or urbanising countries, eagerly attempted to intensify animal husbandry production and even to participate in international animal markets. Animal production was considered a pathway to higher national income and a stronger society with healthier citizens. The chapters of this book have showcased numerous actors and practices in promoting the production and consumption of animal-based goods. It has made visible, for example, activities at the state level as well as actions of commercial operators, the mass media and most recently social media. The increased consumption of animal-based products has not been a natural, self-evident development, but it has required a significant amount of promotion.

Animal industries consist of many kinds of branches that focus on different animal species, as the above chapters have shown by examining how cattle, pigs, chicken, wild and cultivated fish have been incorporated into the logic of industrial production. This has meant a radical transformation in the lives of animals whose task is to produce ever more and at an ever-increasing rate. In recent decades criticism of factory farming and animal exploitation has been intensifying, as has the popularity of vegetarian and vegan alternatives for animal-based products in the Nordic countries. Yet statistics show that meat consumption has not suffered a significant decline. Views are divided between reformers, who believe that remoulding animal industries could solve topical problems, whilst abolitionists see them as manifestations of an essentially unjust speciesism.

Even from an anthropocentric perspective, animal industries are becoming ever more notorious. At the time of writing these concluding words, animal industries feature in many ways in daily news. The European Commission is suggesting a total one-year ban on fishing Baltic herring as the fish population has recently suffered from starvation and could collapse. Coincidentally, at the same time, an important group of consumers of Baltic herring, namely tens of thousands of farmed minks, are being killed in order to prevent zoonosis. The risk of a new global zoonosis is often connected to wild animal markets far from Europe, in conditions considered to be poor both in terms of hygiene and animal welfare. Yet now the hot spot is in Finnish fur farms, where a highly pathogenic avian influenza virus – a virus that itself has evolved together with intensifying poultry farming – has proven to be able to contaminate at least some mammalian species, such as the mink and could potentially contaminate humans. Human fears are well-founded in these cases, but ultimately animals are those who are the primary sufferers.

The complexities of animal industries have prevailed and continue to define many of the challenges and sufferings that our societies and non-human animals encounter today. To disentangle these complexities is to continue the tireless multi-disciplinary work that has begun to be undertaken so that the presumed necessity and justification of animal industries can be questioned and scrutinised, and the exploitative practices that now threaten to destroy all life on Earth can be altered so that multispecies life may survive in the future.

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