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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.

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).

Global meat production, 1961 to 2021

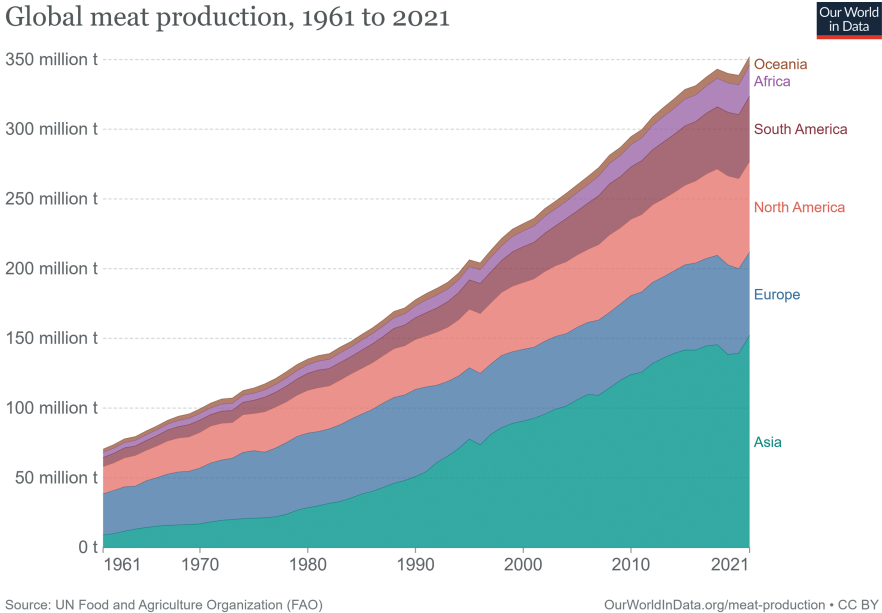


Figure 1: Global meat production, 1961 to 2021.

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

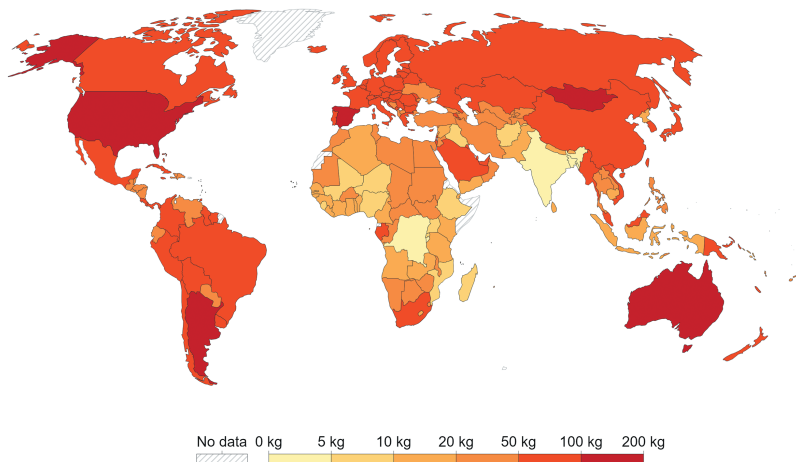
¹⁰ Silbergeld, *Chickenizing Farms & Food*, 70.

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,

Meat supply per person, 2020

Average total meat supply per person measured in kilograms per year.

Our World
in Data



Source: Food and Agriculture Organization of the United Nations

OurWorldInData.org/meat-production • CC BY

Note: Data excludes fish and other seafood sources. Figures do not correct for waste at the household/consumption level so may not directly reflect the quantity of food finally consumed by a given individual.

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 Ritchie, “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.

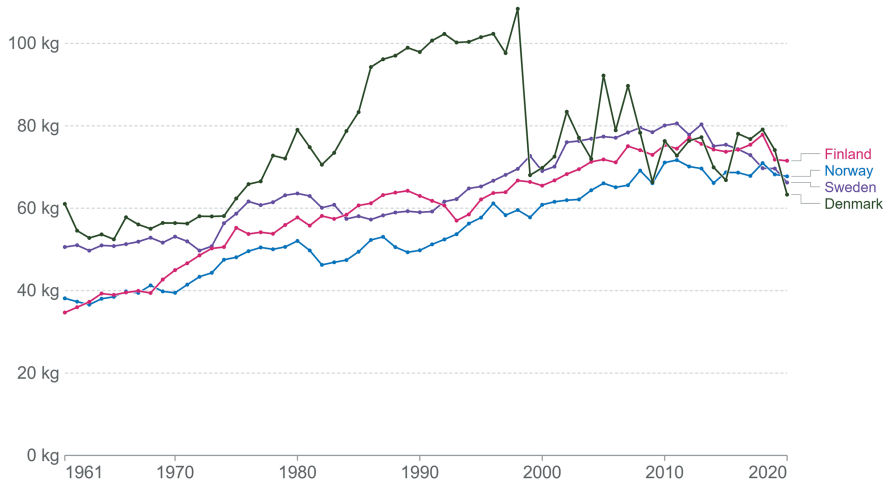
¹⁵ WorldWatch Institute, "Is Meat Sustainable?," *WorldWatch Magazine* 17: 4 (2004); Yinon M. Bar-On, Rob Phillips and Ron Milo, "The Biomass Distribution on Earth," *PNAS* 115: 25 (2018); Otter, "Eating Animals," 476, 487–488.

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

Meat supply per person, 1961 to 2020

Average total meat supply per person measured in kilograms per year.

Our World
in Data



Source: Food and Agriculture Organization of the United Nations

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Note: Data excludes fish and other seafood sources. Figures do not correct for waste at the household/consumption level so may not directly reflect the quantity of food finally consumed by a given individual.

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

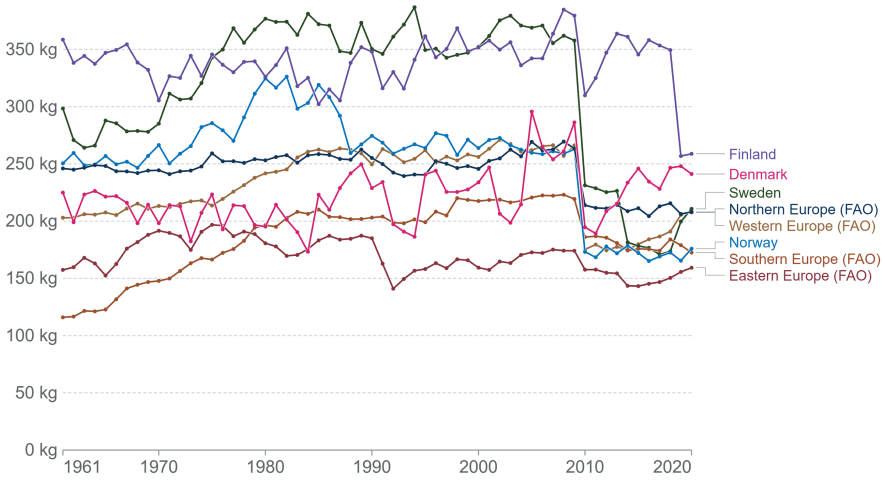
¹⁶ Marja Jalava, “Lihansyönnin edistäminen Suomessa 1900-luvun alkupuolella,” in *Tunteva tuote – Kuinka elämistä tuli osa teollista tuotantoa?*, ed. by Taija Kaarlenkaski and Otto Latva (Tampere: Vastapaino, 2022), 95.

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

Per capita milk consumption, 1961 to 2020

Average per capita milk consumption, measured in kilograms per person per year. This includes the milk equivalents of dairy products made from milk ingredients, but excludes butter.

Our World
in Data



Source: Food and Agriculture Organization of the United Nations

OurWorldInData.org/meat-production • CC BY

Note: Data is based on per capita food supply at the consumer level, but does not account for food waste at the consumer level.

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, *Mjök*, 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 Sjøgren 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.

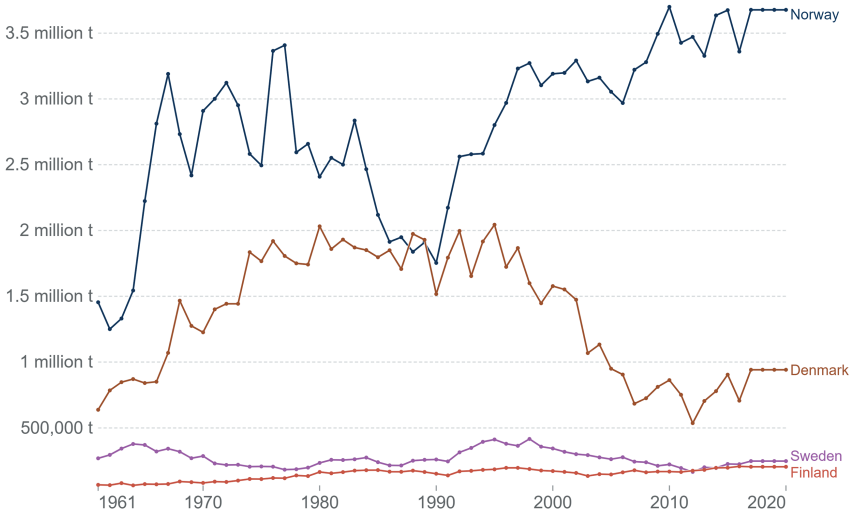
²⁷ Franklin, *Animals and Modern Cultures*, 128–129.

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.

Fish and seafood production

Fish and seafood production is measured as the sum of seafood from wild catch and fish farming (aquaculture).



Source: Food and Agriculture Organization of the United Nations

OurWorldInData.org/fish-and-overfishing • CC BY

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.

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 Lönngrén, "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. Martin 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.

