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Kari Tove Elvbakken

Veterinarians and Public Health: Food Control in the Professionalization of Veterinarians

Abstract: This article explores the role of food control in the professionalization of veterinarians in Norway. Veterinarians became engaged in public health through food control and market inspection, which were the responsibility of Norway's city boards of health from the 1860s. Food inspection served a double purpose: to ensure honest trade and to maintain the safety of food. I argue that food control, which was associated with cities' efforts to secure public health and order, was important to the legitimacy of the veterinarian profession. This activity is not what one today sees as a core practice of veterinarians, which is the prevention and curing of animal sickness. Exploring boundary activities at the fringes of a profession, and especially activity connected to the city and the state, may shed light on the more general sources of professional influence and legitimacy in the Norwegian profession state.

Keywords: Professionalism, veterinarians, professionalization, public health, food control

Studies of professionalisation often focus on the processes connected to education, research, professional associations, journals, and professional practice, especially practices over which a profession gains a monopoly. Some rather remarkable aspects of Norwegian veterinarians' situation inspired this article. Norwegian veterinarians had no educational institution and no monopoly over the curing of animals until 1935, but they did gain a monopoly over a specific public health and food control activity, namely, meat control. From the early 1890s, a veterinary research institution and an independent veterinary directorate were established. How could it be that the Norwegian veterinary research institution and an independent agency appeared so early and an educational institution and a monopoly over curing so late? I will discuss the crucial role of food control and public health engagement in the professionalization of Norwegian veterinarians.

Kari Tove Elvbakken, University of Bergen, Norway

Contact:
Kari Tove Elvbakken, University of Bergen, Norway
karitove.elvbakken@uib.no

On the veterinary profession

The veterinary practice has its roots in tending to the health of army horses. The first academic college for veterinarians opened in Lyon, France, in 1762. Carr-Saunders and Wilson (1933) see the veterinary profession as one of the classic professions, and they point to differences between veterinary education in Britain and that on the continent. In Britain, the roots of veterinary education were more practical, with a weak academic basis. Veterinary education on the continent was academic, and the position of veterinarians was different with respect to positions of prestige in practice, government, and science. A Danish veterinary college opened in Copenhagen in

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1773, inspired by the Lyon College, while Norway's veterinary college did not open until 1935.

In her study of the sociology of professions in Sweden, Hellberg (1978) discusses veterinarians as an example of the role of shifting groups of clients in the professionalization process. She argues that the increased strength of the European veterinary profession during the latter decades of the 19th century has to be related to their role in the process of the modernization of agriculture. Hellberg identified three periods of professionalization: the first, the "horse doctor" period, continued into latter decades of the 1800s. The army—and therefore the state—was the most important employer of veterinarians. During the "animal doctor" period, contributions to agriculture and the treating of animal diseases were predominant. Hellberg frames the final stage, which continues to the present day, as the "pet doctor" period.

A recent volume on the history of Norwegian professions includes veterinarians as one of 34 professions (Asdal & Druglitrø, 2014). The authors explore the process of gaining jurisdiction for the profession, inspired by Andrew Abbot's work (1988), and they include institutional factors in their history. The authors emphasize efforts by the veterinary organization (established in 1888) to gain jurisdiction over the health of animals, to fight quackery and to promote animal welfare, all around the turn of the 19th century. A monopoly over the provision of health care for animals was formalised in 1935. The influence of animal health issues on import restrictions is seen as part of a nation-building strategy and of the tensions between Sweden and Norway in the years before the dissolution of the union in 1905. Aspects of the role played by the relations between the two countries are also explored in works on the history of the veterinary administration (Asdal, 2005, 2006). However, the studies by Hellberg and Asdal do not explore the role played by food and meat control or public health, and the present article aims to contribute to the literature by doing so.

In the European context, Hardy's (2003) study of veterinarians and public health is of interest. Hardy discusses the practice of British veterinarians in public health and the veterinarians' struggle to build a state veterinary agency, starting in the 1860s. When the state introduced a veterinary administration in the Ministry of Agriculture in 1939, veterinary public health activities disappeared from the field of public health at the local, city level. With reference to Schwabe (1969), Hardy underlines that the veterinarians in Europe had achieved a stronger position in public health during the late 1800s and early 1900s than had veterinarians in the UK and US. Koolmees (2000) addresses the same issue in relation to the Netherlands, where veterinarians entered the food control units in the cities from the late 1800s.

The veterinarian and medical professions are often seen as separate, "by virtue of their easily segregated functions and their capacity to practice as entrepreneurs to maintain themselves separately" (Freidson, 1970/1988, p. 52). In the professionalization literature, the number of studies of the professionalization of physicians is high. By contrast, research on the veterinary profession in general, as well as comparative studies between countries and professions, are few. In a review of 207 comparative studies of professional groups, Bourgeault, Benoit, and Hirschkorn (2009) find only a very few that include veterinarians, the majority concerning physicians and jurists.

Theoretical framework

The present study is inspired by a number of contributions to profession literature. Historical-sociological perspectives have inspired studies of the relationship between professionalization and state-building processes (Burrage, Jarausch, & Siegrist, 1990). Relations with the state and the roles and tasks of a profession in the state apparatus may vary over time and between situations. This calls for exploring the specific services in specific contexts that particular professions offer to the authorities, which for veterinarians were the various practices that they performed

within the field—or ecology (Abbott, 2005)—of medicine. Professionalization studies often refer to the very different roles of the state in Europe and the US. State-oriented professions tend to be typical of the continent, and perhaps to an even stronger degree in the Nordic countries. In a comparative study of the health professions in Norway and Sweden, Vibeke Erichsen (1995) finds the concept of "the profession state" to be useful. This concept refers to the importance of actor groups within a profession, acting within or in alliance with the central health administration. Their contributions to institution building may, in turn, contribute to the profession's authority and legitimacy. Erichsen underlines that Scandinavian professions connected to the health sector have largely developed through the state (Erichsen, 1993, p. 395).

The decision to study professions as entities composed of different segments has been inspired by Bucher and Strauss (1961), who emphasise that professions are usually composed of segments that together form an amalgam—the profession—and discuss the possibly different roles of these segments, asserting that some segments may have common features with social movements. The authority and trust achieved by one segment may also be important to other segments.

Freidson (2001, p. 144) argues that the concept of segments does not necessarily refer to specialization into new professions, but it may underline that segments can be characterized by different fields of practice or use of knowledge or different reference groups, while nonetheless having a common community within the profession. In this context, the relationship with the authorities, whether at local or state level, can be said to represent a reference group clearly different from groups related to different specialities within medicine, or veterinary medicine, such as groups of patients or farmers. However, state or local authorities as reference groups may be very wide and complex.

The analysis of professions as an amalgam of groups of actors may originate in Brante's (1988) call for studies of different professional groups of actors, such as for physicians; practitioners, university teachers or civil servants. However, different segments of a profession may have divergent positions and roles with respect to the state and research communities, and their practices may address different fields of knowledge and relations to the authorities. In line with this, a profession may be understood and analysed as being composed of different actor groups, based on different activities and with different connections of knowledge, clients and organizations. A study of physicians by Phillip Elliott (1972) has motivated investigation into the kinds of knowledge and skills that different segments of a profession offer to the authorities—or to different groups of clients.

Many studies of professionalization refer to the concept of "jurisdiction" and the work of Andrew Abbott on professions (1988). His analytical concept of "profession formation" is connected to the division of labour between professions. Different fields of practice can have different jurisdictions—with different dynamics in relation to the state. DiMaggio (1989) points to another concept used by Abbott: "the niche." DiMaggio finds a profession's ability—or good fortune—to find, develop or inhabit a niche to be a very important analytical tool in the study of professionalism. A profession can find new niches of work and practice, with new opportunities to gain jurisdiction and influence. Activities on the fringes of a profession's core activity may reveal a niche practice with new responsibilities, roles, and jurisdiction. Furthermore, professional entrepreneurs may play important roles within a niche. Whether a niche is seen as the core or at the fringe of a professional field is likely to change over time. Jurisdiction may be connected to a fringe or a core activity, possibly with different results.

A recent study explores the role of hygiene and psychiatry in the professionalizing of medicine in Norway in the 1800s and early 1900s (Elvbakken & Ludvigsen, 2016). Hygiene and psychiatry were disciplines addressing issues of social order. With their specific knowledge and expertise they contributed to the standing of physicians generally. The concept of hygiene, or public health, was synonymous with

state medicine or *politica medica* and the practice of hygiene had close ties to the state. This argument is in line with Larson (1977), who notes that physicians, in general, earn respect from the efforts of physicians in public health.

The main question in this study is related to veterinary engagement in public health, which is discussed as a niche aspect of the veterinary profession and from a historical perspective. What was the contribution of public health activity to the veterinary profession? The discussion is based on an examination first of local public health activity involving veterinarians, and second of what happened at the governmental level in connection to these issues. In each section, the characteristics of legitimacy and value from this niche activity are explored. Since the assumption is that segments outside the core professional activity can bring value and legitimacy to the profession as such, important aspects of legitimacy will be discussed. This includes legitimacy from practice, knowledge and scientific activity, as well as the importance connected to that activity. It is assumed that the values from this field of practice are important for the legitimacy of veterinarians more generally.

Material and study design

The author's 1997 study of the institutionalization of food control in Norway up to the 1990s included an analysis of the role of veterinarians (Elvbakken, 1997). That project provided a collection of material that is re-examined in the present study. This material includes documents from ministries and directorates, such as proposals and preparatory work for legislation, but also journals and publications from key actors. This material has been supplemented by new material, such as reports from the Norwegian Veterinary College, official veterinary statistics and other official documents. In addition, historical contributions on the formation of the veterinarian profession, such as Horne (1925) and Frøslie and Ødegaard (1991), are used as sources and as guides to other documents.

In the following, veterinarians' involvement in public health and food control at a local level is explored first. Then, the central veterinary administration is investigated. These sections outline the central characteristics of veterinary public health activity and the legitimacy of this activity. The discussion that follows focuses on what this activity meant for the professionalization of veterinarians in Norway and, more generally, the role of niches within professions.

Public health and food control

Public health legislation in Norway was first implemented with the Public Health Act of 1860, which required local authorities to organize boards of health. These local boards were headed by the city physician, a chief medical officer, employed by and answerable to the state. Although Norwegian cities were rather small, some saw enormous growth in the second half of the 19th century and experienced public health problems similar to those of other European cities (Rosen, 1958/1993).

The cholera epidemics of the 1830s and 1850s, when temporary city health commissions were set up to combat them, provided an important background for Norwegian public health legislation (Benum, 1979). This legislation was inspired by an international awareness of public health problems but especially by the British Public Health Act of 1848 and what followed (Berg, 1986). Problems with housing, poverty, alcoholism, food supply, food adulteration and the flow of infectious diseases were considered to be of vital importance. The hygiene situation in the cities during industrialization was of serious concern in across Europe (Porter, 1994). Illnesses and unrest threatened order, as well as life and health. Such problems were also addressed in Norway, where the boards of health and many city physicians played an active role following the introduction of numerous public health initiatives, such as supplying water, opening public baths and regulating sewage.

Food market and food control

Across Europe, urbanization and new challenges related to the supply of food to cities all presented problems for the food market. This included problems of food adulteration and fraud, as occurred in Britain from the early 1800s (Burnett, 1989). The emerging food industry was using chemicals and additives, often as camouflage for less fresh food. In Stockholm, the old system of marketplace slaughtering collapsed in the late 1800s (Hirdman, 1983). These and other problems connected to food were on the public health agenda in most cities. Simultaneously, the consumption of meat was increasing, even among poor families. The export and import of meat were also contributory factors (Koolmees, 2000); sanitary problems were particularly connected to milk and meat, both of which were considered to pose health risks. Meat was inspected for tuberculosis, trichinae and "spleen fire" (anthrax). In the late 1870s, such inspections were extended to the regular control of slaughterhouses. Regulations to inspect meat for export were drawn up in many countries, especially to secure export interests.

Milk could become infected and spread disease and illness. Milk control activities were conducted in milk shops, dairies and farms in cities like Oslo, Bergen, and Trondheim. The adulteration of milk by dilution with water was of special concern; dilution was a crime and posed a threat to honest trade, as the water might be contaminated, thereby rendering the milk unhealthy. When intentional dilution was proven (which, of course, was difficult), the guilty party would have to pay a fine, and get the name printed in the newspapers. Milk, meat and hygiene standards in shops and restaurants were inspected, and chemical and bacteriological laboratory analyses were conducted to determine whether the food had been adulterated or contaminated. Several reports on investigations of places where milk was sold were published in journals for physicians and for veterinarians. In addition, in other food control units in Oslo, Bergen and Trondheim, research was initiated by the city administration. The *Norwegian Veterinary Journal* was published from 1888 but the first volumes do not include many articles on food control, and the editors were not very eager to receive food control reports (Elvbakken, 1997).

Organizing the food market was on the agenda, and in the city of Bergen, for example, city authorities built a market hall in 1877 to encourage an honest and hygienic food trade. This was a common international strategy; cities built market halls to secure hygienic and honest trade in food. In England, more than 700 market halls were built during the late 1800s and first decades of the 1900s (Schmichen & Carls, 1999).

City veterinarian

In 1878, Bergen appointed its first city veterinarian, Ivar Nielsen. He was appointed to the Board of Health to control the food markets, especially those for meat and milk. The government would later support Nielsen with scholarships to study certain livestock diseases, but he served the city during his long lasting engagement, for about 40 years (Elvbakken, 1997). A city laboratory for bacteriological and chemical analyses of the food that sanitary inspectors collected from the market and butcheries was built soon after Nielsen arrived in Bergen. The chemical analyses included determinations of whether milk was diluted by water (Norges officielle statistik [NOS], 1893). The state later supported this first Norwegian veterinary laboratory.

Ivar Nielsen was educated at the Danish veterinary college, which was modelled on the first academic veterinary college in Lyon (Carr-Saunders & Wilson, 1933). Nielsen was scientifically oriented and the first Norwegian veterinarian to publish internationally. He was involved in research at the Bergen Museum, which had a strong scientific milieu and included medical scientists such as Armauer Hansen (Forland & Haaland, 1996). The list of his publications shows that Nielsen did not publish on food control, but rather on veterinary medical science. Nielsen published

in European veterinary journals and the *Norwegian Veterinary Journal*. From 1909 to 1918, his writing primarily concerned veterinary medicine and microbiology (Elvbakken, 1997, pp. 158–79). Nielsen was interested in medical science and the natural sciences, then emerging in Bergen. In the 1880s his studies (financed by the government) of the sheep plague produced knowledge for the state, as well as scientific publications. Nielsen received a state scholarship for several years from the late 1880s to study different diseases among Norwegian livestock. Reports from his studies and comments from the Medical Director on these reports are included in the state budget proposals (e.g., Sth. Prp. 49, 1890).

Meat Control

Food control was conducted under the Public Health Act, but specific legislation was implemented in 1892 for meat control, aiming at a legal framework for public slaughtering. The initiative for specific meat inspection legislation came from the health authorities in the capital, Oslo, in 1891.The Board of Health issued a detailed report on the bad conditions and operation of abattoirs in the city and underlined that hygiene was very poor (Flateby, 1979). The board wanted a public slaughterhouse to be built to replace slaughtering by unhygienic private enterprises. The City Magistrate requested that the Ministry of Justice develop a legal framework to charge fees for slaughtering in order to offset the costs. The ministry agreed and proposed legislation that required meat inspection in towns with more than 4,000 inhabitants, where meat inspection was to be carried out by veterinarians (Horne, 1925). The Ministry of the Interior, which at the time was responsible for agriculture and veterinary issues, agreed to the proposal. Gaining public control over slaughtering and meat inspection was regarded as urgent. A government proposition was passed by Parliament in June 1892. The new legislation was to be administered by the Directorate of Health, within the Ministry of Justice, as it was a public health issue**.**

At the turn of the 20th century, many European countries regulated the inspection of meat by implementing specific regulations (Koolmees, 2000). Many European cities took responsibility for slaughtering, as it was considered to pose significant safety risks and therefore was the responsibility of the government. Meat inspection occurred at two points: during the slaughtering process and when the meat was on sale. The meat control legislation addressed the first aspect, whereas public health legislation regulated the inspection of meat for sale. Despite the rapid passing of legislation in Norway, it took time before new public slaughterhouses could be built. Oslo opened its slaughterhouse in 1913, followed by a German-inspired slaughterhouse in Bergen in 1919. In both cities, the city veterinarian became the slaughterhouse director. From 1896, Norway's annual official veterinary statistics included information on meat control. In 1920, for example, 30 meat control units in cities and three in municipalities reported on the controls of livestock, like horses, cattle, sheep, and pigs, and the numbers and reasons for rejecting access to the market. Among the reasons, undernutrition prior to slaughter was a common issue.

Hygiene and legitimacy

The Public Health Act of 1860 provided a comprehensive legal framework within which city authorities could set regulations and establish units for food control, and several cities appointed veterinarians for this purpose. The control and regulation of marketplaces were a common issue in European cities at the time. Scholliers (2014) notes, for example, the importance of local laboratory initiatives in the development of food control in Brussels.

Beginning in the 1850s, international congresses of hygiene were held in Europe (Roemer, 1994), and among the topics were milk and meat inspection. The import and export of animals and meat, as well as the sufficiency and safety of the food supply, were urgent problems. Norwegian scholars and board of health members

participated, and some went abroad to study public health initiatives (Elvbakken & Ludvigsen, 2016). Through contact with the European scientific community, Norwegian hygienists and city veterinarians gained inspiration for their activities at home. The relations between the city boards of health and the country's sole university at the time were close, and most of the professors in the university's Department of Hygiene had served on the board of health in the capital, Oslo. At the university, this discipline often involved the boards of health in research during the 1800s and early 1900s.

Through the meat inspection legislation, veterinarians gained a monopoly over a public activity linked to their clientele, the farmers. Veterinarians were given the power to reject meat coming onto the market. City food control and meat inspections were the responsibility of the boards of health, which were headed by state-employed medical officers. Alliances between public health physicians and public health veterinarians were important. This situation has similarities to the situation in Britain, as noted by Hardy (2003).

Involvement in public health included involvement in the scientific activity, and some city veterinarians participated and gained respect as researchers. City public health activity encouraged legislation on meat control to secure the hygienic status of the meat and to make public slaughtering possible. From this, veterinarians gained influence and a monopoly over an important activity, connected to the maintenance of public order, based on legitimacy derived from science in partnership with medicine.

Veterinary administration

Norwegian public administration dates back to 1814 when Norway was separated from Denmark and forced into a union with Sweden that lasted until 1905. However, during the union with Sweden, Norway was allowed to keep the main provisions of its 1814 constitution and its parliament, the Stortinget, which required the building of a state apparatus. However, the state bureaucracy was small, and resources were few (Svalestuen, 1988).

Within the field of health administration, beginning in 1858, accounts of veterinary matters were included in the government's Annual Health Report. In 1865, the government allocated money to the fight against imported or endemic contagious livestock diseases (Horne, 1925), and in 1867, a military veterinarian was engaged to serve as a consultant to the administration responsible for health. The first Director of Health was employed in 1875, and the administration of health was moved from the Ministry of Interior to the Ministry of Justice in 1878; veterinary issues were included in health administration. The number of veterinarians was low, however, and according to Horne, recruiting veterinarians was difficult due to poor working conditions and a lack of interest in sending students abroad. From 1886, veterinary reports were published separately under their own titles (Norwegian Official Statistics), but the responsibility for them remained with the administration of health.

From the 1870s, ministries started to employ specialists in order to serve and support the development of important fields. For example, an agricultural expert was hired as a consultant and later became a Director of Agriculture. Government counselling agencies were established from the 1870s to promote new technologies in agriculture. This was a dual strategy: reforming agriculture was important in itself but also for the Norwegian nation-building process (Jacobsen, 1964). In the field of health, as well as that of agriculture, expertise was included in the central administration, even if the resources were few.

Until 1890, the veterinary and human health administrations were placed under the purview of the Ministry of Justice, where the Director of Health licensed veterinarians and compiled veterinary statistics (Svalestuen, 1988). Licensing depended on education from an approved institution and citizenship. The state only licensed

veterinarians educated abroad, most often from Copenhagen, but also from Stockholm. On October 1, 1890, the Ministry of the Interior took over veterinary issues from the Ministry of Justice (Horne, 1925). Later, from 1900, veterinary issues moved to the new Ministry of Agriculture.

Health administration was also undergoing changes in the years around 1890. These changes are interesting and must be understood as elements of larger, more comprehensive changes in Norway's state and nation building, in relation to policy and administration. Such changes will not be discussed further in this article, however.

Veterinary issues and scholarship 1

Veterinary issues emerged onto the agenda in the Norwegian parliament for the first time in 1815, during its third session (Horne, 1925). Veterinarians were seen as essential for the state, first and foremost for the army. The establishment of an educational institution for veterinarians and a veterinary administration was also discussed. The previous practice, in place since the 1790s, in which counties were obliged to send students to Copenhagen each year, was less relevant in the new situation. In the 1820s, it was decided to buy land for a future education institution and to send one candidate abroad to study veterinary administration and education to inspire the building of similar Norwegian institutions (Elvbakken, 1997).

The physician Christian Peter Bianco Boeck (1798–1877) was granted funds to study veterinary education and veterinary administration abroad, in France, Germany and Denmark. When he returned, he presented plans for veterinary education at the university. The plans were ambitious and far too expensive, however, and were not implemented. From 1828 to 1840, Boeck lectured on veterinary medicine but without an institution in which to serve. He did, however, act as a consultant to the health administration on animal and veterinary issues until being appointed a professor of physiology, comparative anatomy and veterinary medicine in 1840 at the university, which had opened in 1813. These plans met with resistance at the university, especially in the medical faculty (Elvbakken, 1997). This was also the situation in Sweden, where the inclusion of veterinary science and education in the medical faculties was fought (Hellberg, 1978). In Sweden, veterinary education became practical, with a weak scientific basis. That did not happen in Norway.

Veterinary issues and scholarship 2

The relationship between animal and human health was put firmly on the agenda in Europe in the latter half of the 19th century, especially in response to tuberculosis and other contagious diseases. By the late 1870s, the connections between animal health and human health were increasingly recognized (Waddington, 2004). The agricultural revolution also drew more attention to animal health in Norway, as it did in other countries. At a time when Norwegian agriculture was undergoing a wave of modernization, fear of importing animal diseases through cattle from Europe prompted the rising prominence of the veterinarians (Asdal, 2006).

After having proposed on many occasions that Parliament should grant a second (after Boeck) scholarship for veterinary education and administration abroad, the first Director of Health succeeded in 1888. The scholarship was awarded to medical doctor Ole Olsen Malm (1854–1917), who received his veterinary degree in 1889 and embarked on a study tour of France, England and Germany. Upon returning to Norway, he was hired as the Chief Medical Officer for Veterinary Matters in the Ministry of Justice, within the health administration. Malm had proposed that he be given the title of director, to lead a directorate within the Ministry of Interior, where the Directorate of Agriculture, led by a director, was located. Both the Ministry of Interior and the Ministry of Justice, including the Medical Director, disagreed (St. prp. No. 49, 1890; St. prp. No. 1, VI, 3, 1891). Soon after, however, responsibility

for veterinary issues was moved to the Ministry of the Interior.

Malm's proposal in 1890 included a wide range of issues. He saw the question of a veterinary administration, a directorate, as the most important, although it was also very important to be able to build a research laboratory, as will be discussed below. In addition, he argued for money to support the journal for veterinarians, which had been established in 1888. A laboratory was important in order to have research supporting the administration. The state, as well as the cities, needed laboratories to support these activities. In line with earlier proposals put forward by a professor of hygiene, Ernst Lochmann, in the 1870s and 1880s, Malm argued for a veterinary professorship at the university. Whereas the first travelling veterinarian, Boeck, had concentrated on the building of a veterinary college, Malm gave priority to veterinarian administration and a research laboratory.

Malm (1899) saw the importance of ensuring the inspection of animals slated for export to avoid the spread of disease. Moreover, as Asdal and Druglitrø (2014) note, by forbidding the importation of Swedish live animals when infectious animal diseases threatened, Malm acted on behalf of the state authorities by protecting the borders during the process of nation building. Securing the health of the livestock was underlined as being of great interest to farmers. As Asdal points out, Malm underlined his hygiene-oriented values and efforts, in contrast to the Director of Agriculture, who concentrated on economic issues (Asdal, 2006).

State laboratory and research

Malm argued for the need of a state laboratory, like those in the cities. The establishment of The Veterinary Laboratory by the government in 1891 was early compared with Sweden, where a similar laboratory did not open until 1911. Veterinary Director Malm was responsible for the laboratory and had a dual position, combining the roles of scientific researcher and administrator. In 1892, veterinarian Halvor Horne (1866–1952) was appointed as laboratory assistant and secretary in the directorate. Later, he wrote an extensive volume on the veterinary administration and veterinary history (Horne, 1925). For a quarter of a century, Malm and Horne divided their days between the laboratory and the directorate office. They were scientists and heads of veterinary administration. From 1892 to 1911, Malm and Horne published 92 articles (Elvbakken, 1997, 218ff). The *Norwegian Journal for Veterinarians* commenced publication in 1889. It depended upon research activity at the Veterinary Laboratory, as well as research conducted by city veterinarians, such as those in Bergen. The topics of the scientific work, reflected in the publications by Malm and Horne, covered a broad range of diseases, such as tuberculosis, glanders, brucellosis and anthrax, and dealt with various animals, such as cattle, horses, cats, pigs, and sheep. A restricted number of articles addressed food control issues, mostly by Malm on meat and milk inspection and abattoirs.

The Veterinary Laboratory was, in Malm's words, "the seed from which, after a while, let us hope it is soon, must spring forth a Norwegian veterinary school" (Malm, 1899). The strategy was to build a research milieu that would in time develop into something else; the "big future plan" was to have a veterinary university. Malm offered veterinarians the opportunity to work under his supervision at the laboratory and argued for travel stipends. He begged colleagues to send anatomical and pathological specimens to the laboratory.

The connection between animal health and human health was important with regard to research, especially concerning tuberculosis, a point that Malm underscored. The relationship between animal and human medicine was the topic of his doctoral lecture in 1894 and his thesis, *On Tuberculin*. His dissertation in human medicine was printed as an addendum to the *Report on the Veterinary Administration in Norway for the year 1894*. In 1892, Malm produced a tuberculosis vaccine using the Koch method, and he was the first in Scandinavia to produce tuberculin, which was intended for both human and veterinary use.

Legitimacy from physicians to veterinarians

A new situation arose in 1894 when the Director of Health, Holmboe, suggested that the activities specified by meat inspection legislation be taken over by the Ministry of the Interior and the Chief Medical Officer for Veterinary Administration, Ole Malm. Holmboe and Malm were both physicians and colleagues and had been members of the Medical Association in the 1880s, where Malm was influential (Berg, 1986). Malm was willing to take over the administration of the legislation, but only if his position as a chief medical officer was elevated to that of the director. As a director, he would have a directorate to lead that would be independent of the Agricultural Directorate. Malm was thus appointed Director of the Veterinary Directorate in 1895, and meat control legislation came under his jurisdiction. Responsibility for a specific piece of legislation provided an argument for an independent directorate. In this respect, it is reasonable to state that the administration of meat inspection became a lever to securing an independent veterinary administration. With the meat control legislation of 1892, meat control became a niche over which vets were granted legal jurisdiction. The Veterinary Director attained his independent position within the ministry by taking responsibility for meat inspection.

Malm argued for an academic and scientific education, strongly resisting the establishment of a craft-like education (Malm, 1899). The Directorate of Agriculture was responsible for the Norwegian College of Agriculture, which opened in 1859 outside the capital and was given the status of a college in 1899. It was proposed more than once that veterinary education is offered there, as the college had a veterinarian, but Malm opposed the move. Veterinary education was to be medical and scientific, if not at the university, at least at a veterinary college, like in Copenhagen. He was also strongly opposed to having a veterinary education within an institution subjugated to the agricultural directorate. It was considered better to depend on foreign institutions than to compromise the quality of research and education. As mentioned earlier, the veterinary administration in Sweden was separated from the health administration in 1947 (Hellberg, 1978). The independence of the Norwegian veterinary administration was not inevitable. Rather, it came about through cooperation with physicians and as a result of taking responsibility for meat control legislation. It can be said that Malm, as an entrepreneur, exploited the opportunities that arose in this niche field of public health. The veterinarians took over and gained a new field of practice from the physicians.

Discussion

The field of food control in the Norwegian context was open to the veterinarians, in collaboration with physicians, in public health activity in the cities. Milk and meat inspection were fields that veterinarians had the competence to cover. Their knowledge of animals and their laboratory skills in a time of growing interest in bacteriology and microbiology was useful.

In the interplay of food control, administration, and research, the Norwegian veterinary profession was formed. The profession's entrepreneurs leaned towards food control, especially meat inspection. Meat control was an essential part of food control in the cities, and veterinarians gained a monopoly in this field. It is reasonable to claim that veterinarians acquired legitimacy from their work in public health in the cities and that this strengthened their overall position. Using meat inspection as the lever, the veterinary administration was separated from the health administration at the central level. This allowed veterinarians to obtain positions in the ministry with a Veterinary Director equal (rather than subordinate) to the Director of Agriculture.

Co-operation with physicians was important. Even though food inspection was

not considered to be important by representatives of veterinary medicine, city veterinarians were included in local public health partnerships. Veterinarians concerned with hygiene may be seen as belonging on the fringe of the profession, but veterinarians served in local health administrations and had public positions. Some cities also had partnerships in research.

The legitimacy that city veterinarians and meat inspectors acquired seems to have strengthened the position of veterinarians in general. Norwegian physicians transferred responsibility for food control to veterinarians; food control was available to veterinarians, and physicians were willing to allow them to manage this area. We see a segment of the profession with a monopoly on the overseeing of slaughterhouses, a practice important to public health. Veterinarians thus earned a specific role in the new Norwegian state, even if the numbers were small; a majority of the licensed veterinarians were employed by the state or city, in 1895 (58%) and 1920 (63%) (NOS, 1895, 1920). This was a state-financed and state-built profession, and the veterinary profession can be seen as a statist profession, educated abroad, often on public scholarships.

From the beginning, there were strong connections between veterinary public practice, veterinary administration and veterinary science in the cities. Veterinary education had a scientific orientation as early as the 1820s, and in Malm's time, nearly a century later, this principle was maintained; the norm of science seems to be strong. When the Norwegian Veterinary College opened in 1935, it offered a veterinary medical education. Its first rector, Halvdan Holth (1880–1959), combined his position as rector with that of director of the Veterinary Laboratory (Frøslie & Ødegaard, 1991). Veterinary research was performed in a dual institutional context, in the Veterinary Laboratory from its opening in 1891, but also within the Boards of Health in cities such as Oslo and Bergen.

Public health activity may be a field that, in general, contributed to legitimacy. Magali Sarfatti Larson (1977, p. 39) underlines that physicians, in general, benefited from the respect that physicians earned in public health during the years of epidemics in the 1850s—respect that gave physicians "capital" that could be used in other situations and contexts. This is in line with the view that public health or hygiene activity and psychiatry contributed legitimacy to the medical profession, as both activities concerned order and were linked to basic functions of the authorities (Elvbakken & Ludvigsen, 2016). Similarly, for veterinarians, city public health activities generated valuable respect for the authorities responsible for securing health and order. Malm took possession of the field handed over by the director of health. One may ask why. Many reasons can be found. For one thing, this may be understood as the result of a situation in which the field of hygiene was wide, and where other forms of expertise were needed. For another, Norwegian public administration was in its formative years and was relatively open to efforts made by entrepreneurs. If the Director of Health Holmboe was less interested in food and meat control than the former director—who had proposed the meat control legislation—perhaps this helps to explain how the field was ceded.

In addition to public health activity, the veterinary administration was important in the prevention of animal disease. As Asdal and Druglitrø (2014) underline, the veterinary authorities banned the importation of live cattle from Sweden in a period of threatening infectious cattle disease, which was important for the nation-state as it was seen to be connected to Norwegian efforts to gain independence from Sweden in the years up to 1905. The fact that veterinarians were working to prevent animal diseases by hygienic efforts would have supported the economic interests in the agenda of the agricultural Directorate, to use the concepts discussed by Asdal (2006).

This professionalization process demonstrates the close relationship between the vets and the city authorities, as well as the significance of the combination of scientific work with hygiene inspections in promoting the profession. This finding supports the view that we should examine not only the core practices of professions but

also what might be regarded as fringe practices that may have been viewed differently in other situations. Different practices can provide access to groups of clients (such as city authorities) and reference groups (such as scientific networks) that are important to the strength of a profession. Insights from Bucher and Strauss (1961) have motivated the present discussion of the role of veterinarians in public health. In line with Abbott (1988), this is studied as a possible niche activity. I argue that practices at the fringes of veterinary jurisdiction contribute to the profession as a whole and that niches may be as important as core areas.

Conclusion

Food control veterinarians provided valuable knowledge to the state. They cooperated with the physicians of the cities and central government. This case may provide a nuanced picture of the professionalization of veterinary medicine. Microbiological and bacteriological research in veterinary medicine provided useful knowledge for food inspection, and the Boards of Health were partners in hygiene research. The interplay between research and administration illuminates the formation of the Norwegian veterinary profession in a significant way. Veterinarians earned respect and authority through their practices in the field of public health.

In Norway, with a new and rather small state administration, an independent veterinary administration came early. In the laboratory, veterinary entrepreneurs combined research and administration. The contributions of veterinarians to public health, research and the directorate paved the way for the professionalization of veterinarians.

This case study may illustrate the importance of studying professions not as united entities but as groups of professionals or segments with some common characteristics and varying practices, knowledge bases and orientations. The important features of one field of practice may promote the process of professionalization. Scholars represented in the contemporary profession literature call for studies with comparative perspectives, across countries and professions over time (Brante, 2011). I argue that the case of the Norwegian veterinary profession can contribute to a more general discussion about the understanding of professions and professionalization, focusing on the roles that one segment—veterinarians in public health and their field of practice—had in the process of professionalization. Public health engagement offered co-operation with the vital interests of the city and nation in the late 1800s when industrialization and urbanization were connected to a rise in epidemics and threats to the good order of cities. Public health dealt with important societal problems, which in turn gave public health and veterinarians' status and authority in the cities. This cooperation contributed to a scientific legitimacy that, in turn, was important to providing a scientific basis for education, even if it came very late.

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