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Abstract

This article investigates the emergence of the Copenhagen slaughterhouse, called the Meat City, during the last decades of the 19th century. This slaughterhouse is seen as a product of very heterogeneous components: industrialisation and new infrastructures are important, but hygiene and the large size of Danish bacon exports also play a significant role. In the Meat City, this creates a distinction between the rising production and consumption on the one hand, and the isolation and closure of the slaughtering facility on the other. This friction mirrors an ambivalent attitude towards meat in the urban space: on the one hand consumers were demanding more meat than ever before, while on the other hand animals were being removed from the public eye. These contradictions, it is argued, illustrate and underline the change of the city towards a “postdomestic” culture.

The Meat City. Urban space and the provision of meat in industrial Copenhagen

Even though industrial meat provision can seem simple in all its efficiency, this was not the case in Copenhagen in the last decades of the nineteenth century. If we broaden the gaze of meat and the consumption entangled with it to also involve an export market, a network of buildings and infrastructures, and emerging concerns about health and hygiene, the complexity emerge. This article will argue that industrialisation led to a reassembly of these different components, forming a structure that could and did change urban space in the modern city. In what ways did urban space and the provision of meat affect each other in the years around 1900? In order to investigate this question, the article will focus on events and practices involved with the provision of meat in Copenhagen around 1900. The center of attention will be the so-called Meat City, the first major slaughterhouse facility in the city.

I will begin by shortly sketching the way in which the production, distribution and consumption of meat became industrialised in Denmark and especially in Copenhagen. The sketch will point to the new “meat node”, the public slaughterhouse, and the changes it brought about in the occupations related to meat. This will lead to a study of the change in hygienic paradigms, which gradually gained an important role in the city. Another component is the public focus on the

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killing of animals on an industrial scale, and this will be shortly discussed using two cases. These steps should outline the components of the provision of meat that are relevant for the final argument, which is that it was precisely the contradictions implicit in the industrial provision of meat that caused it to be such a force in the social and cultural change of Copenhagen. The overall approach in viewing these changes is to identify them as spatial phenomena.

In the Stomach

If you were to visit Copenhagen one day in the mid-nineteenth century, your first view of the city arriving from the west would be from the hill Valby Bakke. Here you would see the butcher stalls, erected along the old country road leading towards the city's Western Gate.¹ Later the road would become a bustling artery for city traffic, and even then the butchers would still be there, proudly displaying cut-up pigs on their facades.

(Illustration 1: Butcher at Vesterbrogade, Royal Library)

Upon entering the city gate further ahead, your first sight would be the Hay Market, where food for the city's animals (cattle as well as horses) was sold.² If you continued straight on, you would reach Gammeltorv (Old Square) and Nytorv (New Square), where animals were brought for slaughter and sale. On New Square, butchers would be by their carts, killing and cutting up pigs and oxen in the middle of the square. Further on, a street leading north had been called the Meat Trading Street ever since medieval times, owing to its primary function.

From here, a small alley led into the heart of the medieval city, to the old Nikolaj Church Square, where rows of identical butcher's stalls formed the core of the space. Financed by the municipality, these stalls displayed their products in an actual wall of first-class meat. At the back of the stalls, forming an inner yard, you would be surrounded by intestines, blood and bones. Here the cheap cuts were sold. Copenhageners called it the Stomach.

(Illustration 2: Drawing, The Stomach)

Concentrating the provision

¹ Otto Marquard, *Slagtererhvervet i Danmark* (København: Liber, 1958), 121.

² Clay McShane, 'The Ignored Urban Species: Horses in Berlin, Paris and New York', *Informationen Zur Modernen Stadtgeschichte*, 2 (2006).

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As described above, until the mid-nineteenth century the city of Copenhagen was pervaded by meat. Animals were fed, slaughtered, cut up and sold in public, while animal offal and blood was an everyday sight. This closeness between slaughter and everyday life can be traced in many sources, which also reveals that it was not always pleasant. For instance, in 1807 there were medical concerns that:

Emanations from much blood, from the content of the intestines and from the freshly slaughtered meat, quickly contaminate the air; the running water and blood spreads the stench rapidly over the whole town and leads it into the canals.³

In addition to meat production within the city walls, an even larger amount of meat was brought in to marketplaces and squares from the hinterland. In Copenhagen during this period there were two market days a week, and local peasants would populate the town's 4-5 designated squares in these weekly rhythms, concentrated in the medieval centre of town. Urban feeding goes deep into the workings of the large city, even deep enough to actually define a city, as it is done by Hohenberg & Lees.⁴ The moving of animals, dead or alive, in and between cities has been a significant aspect of urban life in the country from the medieval period, and since the meat trade privileges of the Danish nobility was lifted in 1799, the enterprise and networks of cattle routes providing the Danish markets and cities with meat has been an important part of the urban and national economy.⁵

However, during the last half of the nineteenth century the provision of meat in towns and cities changed radically. The consumption of meat in Denmark, and in most Western countries, rose to unprecedented heights, and at a speed which was not seen again until well after World War Two.⁶ At the same time, all the activities relating to slaughtering and butchering were centralised in the major cities by municipal and later state regulation. These two developments were intertwined

³ Henrich Callisen, *Physisk Medizinske Betragtninger over Kiøbenhavn* (Copenhagen 1807), 211.

⁴ Paul M. Hohenberg and Lynn Hollen Lees, *The Making of Urban Europe, 1000-1994* (Cambridge, Mass.: Harvard University Press, 1995); H. Lefebvre, *Rhythmanalysis: Space, Time and Everyday Life* (Continuum International Publishing Group, 2004).

⁵ Bjørn Poulsen, 'Scandinavia 1000-1750', in *The Agro-Food Market: Production, Distribution and Consumption* (Turnhout: Brepols, 2013).

⁶ Paula Young Lee, 'Siting the Slaughterhouse: From Shed to Factory', in Lee, *Meat, Modernity and the Rise of the Slaughterhouse* (University of New Hampshire Press, 2008), 46-70. See also the articles on Barcelona and Buenos Aires in this volume

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with the industrialisation of meat production and provision, something which also developed rapidly during these years.⁷

Given the dynamics of Danish industrialisation, city and countryside were more intertwined than in other parts of western Europe and USA, and meat production serves as a good example of this entanglement. Denmark was also a bit late in terms of developing an industrial workforce: it was not until after World War Two that the number of industrial workers exceeded that of agricultural labourers, and around 1900 the two sectors were entangled in a tight interdependency.⁸ The adaption of agriculture to animal production caused an expansion and a demand for production machinery from the urban factories, as one example – but we shall return to this below. During the period 1880-1914, the rise in industrial production was closely related to a similar expansion in the agricultural sector, owing to new strategies of production and organisation in both sectors as well as interdependence.⁹ Thousands of animals were brought into the “meat nodes” of the major Danish cities like Copenhagen, Aarhus and Odense to be sold or slaughtered and moved away again along other lines. A number of technologies and innovations such as cutting lines, cooling facilities and new architectural designs were accelerating the pace at which this movement happened, with the development of refrigeration being an important turning point in the distribution and movement of meat.¹⁰

In the late 1880's, as noted above, the Municipality of Copenhagen took steps to centralise the provision of meat in one large facility, later to be named as the Meat Stock Exchange, or simply the Meat City.¹¹ Designed as a hub from the beginning, the Meat City was established close to the enlarged Copenhagen harbour and connected to the expanding railroad as well as the important road coming in from the west, connecting Copenhagen (located in the far east of Denmark) to the rest of the country. Developing into a large building complex covering slaughter halls, market buildings, laboratories and related industries, this city-in-the-city also had its own railroad track, gates and walls.

⁷ William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: Norton, 1991).

⁸ Ole Hyldtoft and Per Boje, 'Økonomiske, Geografiske og Demografiske Aspekter', in *Urbaniseringsprocessen i Norden, 3. Industrialiseringens Første Fase* (Oslo: Universitetsforlaget Oslo-Bergen-Tromsø, 1977).

⁹ Ole Hyldtoft, 'From Fortified Town to Modern Metropolis. Copenhagen 1840-1911' in *Growth and Transformation of the Modern City*, Ingrid Hammarström and Thomas Hall, eds. (Stockholm, 1979).

¹⁰ Chris Otter, 'Civilizing Slaughter: The Development of the British Public Abattoir 1850-1910', in Lee, *Meat, Modernity and the Rise of the Slaughterhouse*, 89-106.

¹¹ Later, when in 1938 a new complex was constructed in white painted concrete, there came a distinction between the White and the Brown Meat City.

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(Illustrations 3 and 4: ground plans of the Meat City 1879 and 1889)

One striking feature of the building complex – the largest municipal project of the time alongside the sewer and tram systems – was the material and visual borders it produced. On the one hand, the building layout was employing emergent techniques of transparency, including large open halls, broad asphalt roads, large window frames and open ramps in reinforced concrete.¹² This shows the transferral of slaughtering from the traditional, enclosed “butcher’s cell” of the Parisian artisanal type to large slaughter halls which could be monitored easily by the authorities and were easily accessible for cleaning as well as being equipped with transport systems such as the meat cutting line. On the other hand, the whole complex was kept out of sight of the urban public, walled and enclosed as it was, with control points and integrated lodgings for travelling cattle traders, so they would not have to leave the premises while doing business.¹³ At the maps (ill 3 and 4), we see the expansion of the complex over ten years, from 1879 to 1889. The earliest site comprised the central cattle market halls with stables along both sides, and in the southern end a dining hall along with a horse market. From 1883, three slaughtering halls were built (to the eastern side on illustration 4), so the municipality could effectively prohibit private slaughtering in the city. Then came the larger buildings, for example the Monumental Oxen Hall built in 1901, the train infrastructure, and the cooling facilities that can be seen with the electrical cables painted in red far north on the map.

There also seem to be contradictory forces at play in terms of access. The Meat City was designed to be easy accessible, transparent and legible, as was the emergent factory architecture of the period. Looking at illustration 4, we see how carts (through the gate to the south) trains and ships (from the north, top end of the map) had direct access to the inner parts of the complex. On the other hand, there was a degree of control and systematic isolation at work to a degree hitherto unseen in the city. Gate control, quarantine systems, laboratories and commissioners strove to provide a constant and – at least in principle – omnipotent gaze.¹⁴

The provision of meat to the urban population gained a new layer of control with the Act on Domestic Meat Control of 1906. Here standards were set out for each municipality, stating for example that all meat should be identified in three quality categories and stamped as such. State legislation was a sign of the rising importance of meat, partly because the export of Danish food

¹² Poul Børge, *Københavns Kommunes Flæskehal* (København: Københavns Borgerrepræsentation, 1910).

¹³ See Minutes of Copenhagen City Council 1878, pp. 266-276 and 1885 pp. 671-680. This was not unique for Copenhagen, see for example Ian Machlachlan, “A Bloody Offal Nuisance: The Persistence of Private Slaughter-Houses in Nineteenth-Century London,” *Urban History* 34, no. 2 (2006): 227–54. There is also relevant comparisons in the articles on Moscow and Buenos Aires in this issue.

¹⁴ See e.g. the discussion of slaughter halls and cells, in the minutes mentioned above, p. 267.

products changed rapidly in the 1880's and onwards. On a broad scale meat became a central catalyst, or a site for the above mentioned "entangled" industrialisation of Denmark, with agriculture and industry developing in a reciprocal and intertwined way in the decades preceding 1900. The basic elements were as follows. In the period 1870-90 the agricultural sector in Denmark was radically reorganised following challenges on the international market for grain.¹⁵ Danish peasants had turned from grain to animal production as a response to low American grain prices, and to the two products that became cornerstones of modern Danish exports: bacon and butter. Furthermore, Denmark had traditionally sold meat in Germany, but following German protectionist import restrictions, Danish farmers in the 1890's turned to the UK, where they found a virtually insatiable market.¹⁶ Correspondence from the period shows vividly how agricultural organisations were amazed at the volume of the British market for Danish animal products, especially bacon, which became a phenomenon in itself in Britain, with significant and ambivalent influence on the modern British diet.¹⁷ By 1900, practically all Danish bacon was exported to the UK, and the Danish market share of bacon in the UK was around fifty percent.¹⁸ These factors, and the Danish ability to produce meat at a fast pace and reasonable standard, created a special development, where the characteristic production of the farm intertwined with that of the factory, mutating into an agro-industrial pattern. New infrastructures emerged for moving animals dead or alive, and the economic outcome caused, for example, a growing demand for machinery, again creating a growth in the urban machine industry. This was especially the case for the national and regional capitals of Denmark – Copenhagen, Aarhus and Odense.¹⁹

This entanglement was followed and strengthened by the Danish cooperative movement, for which slaughtering became the second-largest activity after dairy production. The cooperative slaughterhouses became a strong interest group and also a central agent of technological, organisational and economic change in the provision of meat products.²⁰ They played a central role

¹⁵ Hyldtoft and Boje, 'Økonomiske, Geografiske og Demografiske Aspekter'.

¹⁶ Ole Hyldtoft and Hans Chr Johansen, *Teknologiske Forandringer i Dansk Industri 1896-1972* (Odense: Syddansk Universitetsforlag, 2005); Søren Bitsch Christensen, Hilde Sandvik and Mogens Nissen, 'Scandinavia 1750-2000', in L. van Molle and Y. Segers (eds.), *The Agro-food Market: Production, Distribution and Consumption* (Turnhout, 2013). 379ff.

¹⁷ Otter, 'Civilizing Slaughter: The Development of the British Public Abattoir 1850-1910', in Lee, *Meat, Modernity and the Rise of the Slaughterhouse*.

¹⁸ Hyldtoft and Johansen, *Teknologiske Forandringer i Dansk Industri 1896-1972*, 123ff.

¹⁹ Ole Hyldtoft, *Københavns Industrialisering 1840-1914* (Systime, 1984); Jens Toftgaard and Jeppe Norskov, *Købstadens Metamorfose. Byudvikling og Byplanlægning i Århus 1800-1920* (Aarhus: Aarhus Universitetsforlag, 2005).

²⁰ Ingrid Henriksen, 'Avoiding Lock-in: Cooperative Creameries in Denmark, 1882-1903', *European Review of Economic History* 3, no. 1 (2006): 57-78. Mary Hilson, 'The Nordic Consumer Co-Operative Movements in

in Danish exports, using the experience of centralisation and regulation that was developing in the cities around 1900, and working together with the Danish state and private slaughter enterprises to create a strong brand of Danish bacon.²¹ At the same time, the Danish capital was regarded as a progressive model in international scientific publications such as *The Lancet*, and this was linked to the emergence of cooperative practices of slaughtering and management.²²

The cooperative movement began simultaneously with the other developments mentioned above. From 1883 onwards, a number of cooperatives emerged in the Danish countryside, establishing dairies, electrical works, cooling houses and other small-scale industrial plants supplying local communities and owned collectively by the local farmers. Soon after 1900, more than forty such plants were functional around the country.²³ Around World War One, 43 cooperative slaughterhouses had been established in Danish cities, taking part in the export adventure, and thriving on the new discovery that skimmed milk from the growing dairy sector was good food for pigs.²⁴ The cooperative slaughterhouse became iconic in the narrative of Danish agricultural progress, as evident from a contemporary observation by the Danish smallholder and writer Johan Skjoldborg, whose protagonist in the novel “The Crowhouse” regards the local slaughterhouse as the promise of a great future.²⁵ Together with the rise of private export slaughterhouses, the cooperative meat industry was one of the reasons for the importance of meat in the merging of city and country around 1900.²⁶

During industrialisation, practices of slaughtering became separated from those of butchering and retailing meat. The period around 1900, as economic historian Jørgen Fink points out, witnessed a radical change for the Danish butcher as a craftsman.²⁷ The retail butcher long remained attached to the culture of master and apprentice, belonging to the same household, while

International Perspective, 1890-1939,” in *Nordic Associations in a European Perspective* (Nomos Verlagsgesellschaft, 2010).

²¹ David Higgins and Mads Mordhorst, 'Bringing Home the 'Danish' Bacon: Food Chains, National Branding and Danish Supremacy over the British Bacon Market, C. 1900-1938', in *Enterprise & Society* 16, no. 1 (2015): 141-85; Amy J. Fitzgerald, “A Social History of the Slaughterhouse: From Inception to Contemporary Implications,” *Research in Human Ecology* 17, no. 1 (2010): 58-69.

²² Sanitary Commissioner, 'The Demand for Public Abattoirs', in *The Lancet*, 178, 4602 (1911): 1367-68; Sanitary Commissioner, 'Sanitary Progress at Copenhagen', *The Lancet*, 2, 4548 (1910): 1307-9.

²³ Marquard, *Slagtererhvervet i Danmark*, 178ff.

²⁴ Christensen, Sandvik and Nissen, 'Scandinavia 1750-2000', 384ff.

²⁵ Johan Skjoldborg, *Kragehuset* (Copenhagen, 1896).

²⁶ See, for example, Christensen, Sandvik and Nissen, *Scandinavia 1750-2000*; Mary Hilson, 'The Nordic Consumer Co-operative Movements in International Perspective, 1890-1939'; Peter Sørensen and Kurt Pedersen, 'Limits to Scale and Scope: The Failure of a Danish Slaughterhouse Merger in 1890/91', *Business History* 49, 5 (2007): 595-624.

²⁷ Jørgen Fink, *Middelstand i Klemme? Studier i Danske Håndværksmestres økonomiske, sociale og organisatoriske udvikling 1895-1920* (Aarhus: Jysk Selskab for Historie, 1988).

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the wholesale slaughterer became an industrial worker.²⁸ While the retail butcher developed a new, “clean” way of displaying meat in his shop for public gaze, the wholesale butcher worked in the “dirty” slaughter hall, removed from the eyes of the public, but regulated by public authority.²⁹

Connected to this division of meat labour, a multiplicity of other trades and professions became involved in the provision of meat.³⁰ One of these trades was the market for meat by-products such as offal, intestines and hides. This became an emergent industry of its own, spatially and economically connected to the Meat City, producing for instance bone flour, tallow, tanning and so on. The commissionaires were also involved, combining the role of the traditional cattle trader with a new practice of value fixing in the changing meat market. There were also vets, who were expected to deal with the important area of animal hygiene and engineers specialising in the development of “meat technologies” such as slaughter tools, meat circulation, refrigeration and the calculation of risks and outputs, private or municipal (see illustration 5) ; officials building systems around the regulation of the relations between the meat market, city and state; and police officers from the new Veterinary Police, later called the Health Police, handling quarantines and sanctioning the regulatory system. As in other fields of industrial production, the meat industry also provided work for women. Specific parts of the production, such as the poultry lines, were regarded as particularly suitable for female workers.³¹

Ill 5: The municipal engineer’s office was involved in much of the infrastructure design of the Meat City. Here is a technical drawing of a “disassembly line” prepared for meat hooks and installed in the ceiling. Copenhagen City Archives.

Consumption curves

In the last half of the nineteenth century, we witness a rise in the Danish demand for meat, not unlike other large western cities, where consumption increased, with the urbanites as the most

²⁸ Knud Knudsen, *Dansk fagbevægelses historie frem til 1950, SFAH's Skriftserie*, 1 (Kbh: Selskabet til Forskning i Arbejderbevægelsens Historie, 2011).

²⁹ Gergely Baics, 'Is Access to Food a Public Good? Meat Provisioning in Early New York City, 1790-1820', in *Journal of Urban History* 26, 1 (2012).

³⁰ Lykke Pedersen, "'Sætte Tæring Efter Næring". Filantropi og Fattigmad', in *Kost og spisevaner i 1800-tallet* (København: Museum Tusulanum Press, 2009), 209-48.

³¹ Dorothee Brantz, 'Animal Bodies, Human Health and the Reform of Slaughterhouses in Nineteenth-Century Berlin', in Lee, *Meat, Modernity and the Rise of the Slaughterhouse*, 71-88.

heavy meat eaters.³² Recent Danish research shows that pork exceeded beef as the most consumed meat product just before 1900, and that poultry consumption was also increasing.³³ Furthermore, and relevant in this context, it seems that the urban population generally began to demand fresh meat, which became a prestigious food for the growing middle class.³⁴ For the working class population, the growing meat diet also took the form of industrial products like liver pate and sausage on industrially produced bread, and processed meat, all products made from the surplus of meat and intestines not fit for export. One could say that a diet of “leftover meat” made its entrance in Denmark, a diet that should be dominant in decades to come.³⁵

(Ill table consumption)

On the other hand, the transformation of the meat economy led to an expansion in production and lower prices, making fresh meat accessible to a larger part of the urban population, especially in the capital.³⁶ Thus, in the years around 1900, between 150,000 and 200,000 animals was slaughtered per year in Copenhagen.³⁷ Many more were brought into the city in order to be shipped out again alive, mainly to Britain. The long tradition of driving cattle along trails going back to the medieval period was effectively erased with the advent of the railroad, which changed land transport, and steamships facilitated the movement of cattle over sea as well.³⁸ But the consumption of meat was also encouraged by hygienic authorities at the time such as the doctor Chr. Jürgensen, the first Nordic physician to connect biochemistry and nutrition.³⁹ Together with other prominent figures such as Peter Panum, Jürgensen recommended meat as the central source of protein, a piece of advice that, though contested, found its way into public regulation.⁴⁰

³² Otter, 'Civilizing Slaughter: The Development of the British Public Abattoir 1850-1910'. (see also the article on Barcelona in this issue)

³³ Tenna Jensen, 'Fødevarerforbrug i Danmark i det 20. århundrede: Tre Perspektiver på Fødevarerforbrugets Langsigtede Udviklinger' (University of Copenhagen, 2011), 275; Ole Hyldtoft, *Mad, drikke og tobak i 1800-tallet. Forbrugsmønstre, kultur og diskurser* (København: Museum Tusulanum Press, 2012), 351.

³⁴ Marquard, *Slagtererhvervet i Danmark*, 193.

³⁵ Niels Kayser Nielsen, *Madkultur. Opbrud og tradition* (København: Klim, 2003); Christensen, Sandvik and Nissen, 'Scandinavia 1750-2000', 388ff.

³⁶ Ole Hyldtoft, *Teknologiske forandringer i dansk industri 1870-1896* (Odense: Odense Universitetsforlag, 1996); Marquard, *Slagtererhvervet i Danmark*, 121.

³⁷ Beretning om Kvægtorvet og de offentlige Slagtehus for 1909-1910, København 1911. p. 2.

³⁸ Poulsen, 'Scandinavia 1000-1750'

³⁹ Bente Leed, 'Kødet i kostråd gennem tiderne. Koge- og lægekunstens lange og komplicerede samliv', in *Kød: En Antologi* (København: Tiderne Skifter, 2012), 174.

⁴⁰ Chr Jürgensen, *Grafisk Fremstilling af de menneskelige Fødemidlers og nogle Spisers kemiske Sammensætning* (København: I.H. Shutbothes Boghandel, 1888).

Floating between two worlds

Simultaneously with the processes mentioned above, multiple practices, spaces and technologies were developed to make the killing and dismembering of animals as smooth, silent and isolated as possible, a process investigated by ethnographer Noëlle Vialles.⁴¹ In her account of contemporary slaughtering practices, she suggests that one of the most vital features of modern slaughter is the distinction between those who kill the animal and those who eat the meat.⁴² This, according to Vialles, is deeply embedded in the design of the modern slaughterhouse. Ordered as a directional space, it is divided into a clean and an unclean sector, leading through a space of passage, “floating between two worlds” of the living animal and the dead meat. The act of killing is itself split up into several steps, emphasising this floating process: first the cow is caught in “the trap”, singled out from the flock, then made unconscious with a stunning device. In a way, the stunner introduces the state of not being alive for the animal, while the act of making the animal bleed makes death irreversible. In between the two, Vialles suggests, the act of killing is blurred, opening the possibility of ignorance about who actually causes death. This Vialles finds mirrored in the French term for slaughterhouse, “abattoir”, meaning a place for “bringing down what is standing”. When the animal falls, it is but a body, ready to become a carcass. Vialles’s description of the contemporary meat industry fits well with procedures of slaughterhouse work around 1900. Here too, cattle were sedated by means of clubs or the like, then lifted by their hind legs. Their throat was cut and the body was positioned so a maximum of blood could run off, transforming the silent body into a carcass. It was then flayed while hanging from the ceiling, and the body parts – from now on “the cuts” – were removed from it, turning it into a dismembered set of bones and muscles. Thus, the industrial division of labour splits up traditional slaughter practice into many small steps, expanding and almost stretching the floating passage between living animal and dead meat. What was previously done by one or two men was now divided into the labour of a dozen workers along the “disassembly line”.⁴³ This process is closely related to the change in slaughter work described above.

⁴¹ Noëlle Vialles, *Animal to Edible* (Cambridge: Cambridge University Press, 1994).

⁴² *Ibid.*, 31.

⁴³ *Ibid.*, 49. The “disassembly line” was developed in the Chicago slaughter industry and was probably the inspiration for the later assembly line developed in the Ford car factories, see Cronon, *Nature’s Metropolis: Chicago and the Great West*, 229.

Much of Danish industry involved producing perishable goods. Beside bacon and butter, other products such as bread, beer and cheese became well known for their high standard and reasonable price. The success had a number of causes. New technological innovation was part of it, and also a decentralised organisation. But a central agent of change and growth in the mass production of perishable food products was the new, applied chemical and biological science. The most famous Danish industrialist to do this was the founder of Carlsberg breweries, Carl Jacobsen, who observed and studied the latest developments achieved by leading researchers such as Louis Pasteur. Using Danish barley and its own yeast recipe, the brewery was able to develop and control the complex fermentation processes, and not least to repeat them and produce a standard product. Other urban industries such as the rye bread factories of Schulstad and the cooperative dairy Enighed also built their production on certain types of fermentation process, exploiting the knowledge of a growing group of chemical engineers across Europe.⁴⁴ So for these industrialists, the key to success was the control of decaying processes. With meat though, this became problematic.⁴⁵ Earlier habits of letting meat hang or in other ways decay in order to become tender never gained ground in industrial processing, but stayed in the “old” realm of meat such as game or manually butchered animals. One explanation could be that the fermenting processes used for meat were unfit for industrial processes, but it is more likely that the desire for fresh meat and anxiety concerning contagion simply reduced the demand.

In the words of Vialles, meat became “de-animalized”. While becoming a mass produced commodity, meat was taken as far as possible from its original relation to the animal body and changed into an abstract materiality, prepared to enter the human body.⁴⁶ There seems to be a widespread notion in food sociology and food anthropology that meat is simultaneously the most highly prioritised and contested element of modern western food culture. This double position is related to the basic ambivalence of meat as a costly, desirable and ethically problematic food.⁴⁷ One

⁴⁴ Miriam Levin, *Urban Modernity. Cultural Innovation in the Second Industrial Revolution* (Massachusetts: MIT Press, 2010).

⁴⁵ Mikkel Thelle, 'Kødknudepunkter : Byens rum og det industrielle slagtehus omkring 1900', *Fabrik og Bolig*, 2014, 3-17.

⁴⁶ Vialles, *Animal to Edible*, 65.

⁴⁷ Julia Twigg, 'Vegetarianism and the Meanings of Meat', in *The Sociology of Food and Eating* (Aldershot: Gower Publishing, 1984), 18-30; Sara Korzen and Jesper Lassen, 'Meat in Context: On the Relation between Perceptions and Contexts', *Appetite* 54 (2010), 274-81; Lotte Holm and Jesper Lassen, 'Kan det spises? Sociale og kulturelle aspekter af det kødelige', in *Kød: En Antologi* (København: Tiderne Skifter, 2012), 77-93; Lotte Holm and M. Møhl, 'The role of meat in everyday food culture: An analysis of an interview study in Copenhagen', *Appetite* 34 (2000): 277-84; Deborah Lupton, *Food, the Body and the Self* (London: SAGE, 1996).

element of this is the shifting relationship with animals in modern urban life, from domestic livestock to “walking meat”, removed from the eyesight of modern urbanites.⁴⁸

Decay, contagion and modern sensitivity

In the slaughterhouse, certain processes needed to be eradicated. Contagion, contamination and the decay of meat were the major problems that had to be prevented. Interestingly enough, decaying meat in itself was not necessarily regarded as a health hazard, as recognised in contemporary popular scientific literature:

The simple decay of meat seldom gives rise to serious poisoning. Game is enjoyed by some in more or less decayed condition, and the “corpse poisons” (Ptomaines) are destroyed by heating the meat.⁴⁹

Even so, decaying processes were becoming an object of anxious attention in Copenhagen, as in most other large, industrialised cities in the last half of the 19th century. In its basic, chemical sense, fermentation is the conversion of carbohydrates into alcohols and carbon dioxide or organic acids using yeasts or bacteria under anaerobic conditions. Simple as it sounds, the result is a multiplicity of transformative processes, different in each case: hard can become soft, dry can become wet, and sustaining structures can become dissolving, leaving behind a totally transformed material object which often provides ecosystems for bacteria, worms, insects and larger animals. Properly enough, another term for the process is “decomposition”. Thus, as well as being a productive process, decomposition is also the way most food products are transformed into inedible, disgusting and unhealthy objects. In short, it is part of decay. As we can see from the quote above, partly decayed meat was considered a delicacy in the early modern city. But while the delicate taste of controlled decay became part of many other products, meat in this period was supposed to be as fresh as possible. At the turn of the century rotten pork or beef was regarded as one of the most repulsive and dangerous objects of the modern city, and any attempt to accept decay in the slaughterhouse would be deemed inappropriate by public opinion.⁵⁰

⁴⁸ Adrian Franklin, *Animals and Modern Cultures. A Sociology of the Human-Animal Relations in Modernity* (London: SAGE, 1999).

⁴⁹ Salmonsens Konversationsleksikon, 2nd ed., 1915, p. 149.

⁵⁰ Meat and public health was closely linked in public abattoirs all over Europe, and often viewed as the central difference between public and private slaughtering, see Anne Hardy, “Pioneers in the Victorian Provinces: Veterinarians, Public Health and the Urban Animal Economy,” *Urban History* 29, no. 2 (2002): 372–87; Michael Hård

Rotting meat was complicated, in more than one sense. In the more populated cities in this period, it was a focus for anxious attention, as noted above. In the eighteenth century, meat as well as living animals were part of everyday urban life, and the processes of decay and transformed bodies – as well as the sounds and sights of animals being killed – attracted curious crowds in squares and backyards virtually everywhere.⁵¹

The microbic invasion

The anxiety concerning decaying meat related to a new hygienic sensibility, partly driven by the rise of medical and biological sciences and strengthened by the urban epidemics of the time. Especially the large outbreaks of cholera, hitting Copenhagen in 1853, mobilised groups of hygienic reformers among the urban bourgeoisie.⁵² The success of this movement is reflected by the large investments in sewer systems and water supply in most western cities along with the establishment of prominent public institutions and municipal departments dedicated to health policies following these investments. In Danish urban history, a clear example is the development of the Copenhagen City Engineer's Office 1886-1912 under Charles Ambt.⁵³

Among these institutions was the Public Meat Control system in Copenhagen. Through the Municipal Health Act of 1886 and following procedures for slaughterhouse control adopted in 1887, a system was established for ensuring veterinary control covering the whole meat distribution system, that is, the Meat City as well as all the butcher's shops in Copenhagen. The regulation specified that any person entering had to be registered, children under the age of 14 were

and Anne I Hardy, "Common Cause: Public Health and Bacteriology in Germany, 1870-1895," *East Central Europe* 40, no. 3 (2013): 319–40; Dorothee Brantz, "How Parasites Make History: On Pork and People in Nineteenth-Century Germany and the United States," *GHI Bulletin*, no. 36 (2005).

⁵¹ McShane, 'The Ignored Urban Species: Horses in Berlin, Paris and New York'; Chris Otter, 'Cleansing and Clarifying: Technology and Perception in Nineteenth-Century London', in *Journal of British Studies* 43, 1 (2004); Aa Andersen, 'Københavns Torvehandel Gennem Tiderne', *Fra kvarngård til humlekule. Meddelelser fra Havebrugshistorisk Selskab* 14 (1984), 7-19; Hugo Mathiesen, *Københavnske Gader* (København: M.P. Madsens Boghandel, 1924).

⁵² Ulrik Okkels Iversen, 'Byens Plan. Hygiejnebevægelsen og byplanlægningen i København 1844-1865' (Københavns Universitet, 2004); Jes Fabricius Møller, 'Biologismer', (Københavns Universitet, 2002); Hanne Lindegaard, 'Ud af Røret? Planer, processer og paradokser omkring det københavnske kloaksystem 1840-2001' (Danmarks Tekniske Universitet, 2001); Gerda Bonderup, 'Cholera-Morbro'er og Danmark. Billeder til det 19. århundredes samfunds- og kulturhistorie' (Århus: Århus Universitet, 1994); Karin Lützen, *Byen Tæmmes. Kernefamilie, sociale reformer og velgørehed i 1800-tallets København* (København: Hans Reitzels Forlag, 1998).

⁵³ Tim Knudsen, 'Charles Ambt og gadeplanlægningen i Vestervold Kvarter', *Historiske Meddelelser om København*, 37 (1989); Ulla Tofte, 'Charles Ambts bidrag til dansk byplanlægning 1875-1902' (Københavns Universitet Amager, 1998); Ulla Tofte, 'Charles Ambt Og Dansk Byplanlægning 1875-1902', in Søren Bitsch Christensen et al., ed., *Den Moderne By* (Aarhus: Aarhus Universitetsforlag, 2006), 153-73.

not allowed, no animal or animal part could leave the facility without a proper stamp – and so on. Specially trained officials and police officers tested all the livestock and meat that moved through the system, and laboratory personnel acted as the microscopic eyes of the control organisation.⁵⁴ The case of trichinosis provide a case of this, and we get a glimpse of the spatial layout through a description of the trichinosis test facility of 1910:

[the facility has] 3 halls, a laboratory, a veterinary room, a lunch room and 2 toilets ...

[the personnel consists of] 2 registrars, 8 test cutters and 70 trichinosis searchers ...⁵⁵

Women were chosen for the jobs, since they were considered best at maintaining their visual concentration on small details, and they were only allowed to work for eight consecutive hours so they could keep this level of visual focus.

The system was pervasive. In 1889, for instance, 40 tons of beef alone were discarded, and health police officers had carried out more than 37,000 inspections of shops and butchers in town.⁵⁶ The municipal inspectors at the slaughterhouse gates were veterinarians, and through them the available medical and biological knowledge was applied on an industrial scale. Their logbooks confirm that the animals here were entered as bodies or body parts. Listings give details of “a body of 1 calf”, or “head and legs of 2 pigs”, and so on. These bodies were accepted or discarded due to observed symptoms, and if we follow the list of these, we get the impression of a system that is anxious to rule out anything suspicious, unhealthy or not.⁵⁷

Another example of this suspicion can be found in the “meat scandal” that caught public attention in the city in 1890. In February, the newspaper *Politiken* reported that a deal had been struck between the city’s master butchers and the mayor. The background was as follows: before compulsory slaughtering, the butchers of Copenhagen could keep their own livestock for private sale. The business model was to feed the offal – typically intestines and residual meat – to their stock of pigs, thereby recycling such products and contributing to their profits. This practice became illegal, and the butchers complained to the city council. At a meeting between the two

⁵⁴ See “Reglement for Benyttelsen af Københavns offentlige Slagtehus” (Rules for Copenhagen’s Public Slaughterhouses), 1887, Danish Municipal Archives.

⁵⁵ Poul Børge, *Københavns Kommunes Flæskehal*, 8.

⁵⁶ Record of the Meat Control 1888-1923, KB F 341 Copenhagen City Archives.

⁵⁷ Bodies were discarded on the grounds of (for example) emphysema, arthritis, degeneration, tapeworms, pneumonia, hepatitis, broken bones, emaciation, jaundice, cirrhosis and contusion. Copenhagen Municipal Archive, Record of the Meat Control, March 1910.

parties, the responsible mayor Borup advised the butchers to take a closer look at the large amount of offal produced by the slaughterhouse that was now processing all animals from the Copenhagen hinterland. The butchers did not hesitate long before establishing a cooperative pork facility on the outskirts of town, feeding on the remains from the public slaughtering. Thus, the stream of intestines, bones and residual meat from the Brown Meat City provided a great energy source for feeding other hogs for slaughter, a re-use cycle that was formerly part of the butchers own household, but now could be managed on an industrial scale.

However, handling offal from a facility as large as the public slaughterhouse was no simple task. Industrial meat processing had complex consequences, and livestock from one farm could end up as food in hundreds of different homes. Animals were literally split into fragments of body parts, some shipped off in bundles, some sold to butchers in town, and some becoming food for other animals which were subsequently recycled in a similar fashion. If a disease broke out at one farm and was not identified, it would spread at unprecedented speed.

At the gates of the slaughterhouse, all livestock was tested in order to separate good from bad meat. However, as the animal body was dismembered, it became hard to keep control: body parts circulated at a fast pace around the Meat City, which was the size of several soccer stadiums. This constituted both an opportunity and a problem for the butchers involved. The deal with the municipality was that the butchers should offer to handle all the offal and in return get it for free. But the spatial logistics involved in the above-mentioned new practice were relatively complex, involving different slaughterhalls, quarantine halls, laboratories and so on, making up many points at which good and bad meat could be mixed up. This was a challenge to the people who were responsible for handling the “meat out of place” – the butchers – but it also tempted them to exploit this labyrinthine system for their own interest, which was exactly what they were accused of.

In October 1890, people began to wash their hands in the case. A letter to the editor of *Politiken* signed “Y” was probably written by a veterinarian. It stated that the vets had no responsibility for slaughterhouse sanitation since they had no business there. Thus, when contaminated and healthy meat were mixed at this facility, it was only supervised by the master butcher, in this case a certain Mr. Ulrichs. The letter says “The fact that the administration leaves so much authority with Mr. Ulrichs surprises the vets, but they have no say in this”.⁵⁸

Furthermore, “Y” suggests that in order to keep track of the contaminated meat, it was not sufficient to provide the animal in question with a slip, since, for example all the intestines could be

⁵⁸ *Politiken*, 19 October 1890.

removed and circulated as healthy meat. Instead, “Y” suggests that the meat should be weighed to determine if any meat had been removed, with a view to ensuring that no discarded meat was sold. And the letter goes on:

One has almost no guarantee [of the meat quality] .. there are only a few stamps on each animal, so piles of meat can be sold without a stamp ... *is it not a little uncanny ...?* One suspects that the ugly, black spots are meticulously cut from the meat... ”.⁵⁹

The letter ends by suggesting that the German Freibank system should be used, under which different qualities were sold from separate localities in the slaughterhouse area of the city. It was impossible to distinguish good from bad meat just by eyesight, and now, through the attention generated by the scandal, it became apparent that the measures taken to identify circulating steaks and shanks were not working. The microbes were circulating freely between animal and human bodies.

The vets and others with veterinary training such as the trichinae searchers were ultimately responsible for the safety of the animals and meat that was later to enter human bodies. But the vets’ role as “safety officials” implied a mediation of knowledge that was subject to change at this period. Until the 1880’s the dominant framework for understanding the spread of disease had been the idea of the miasma, thriving in swamps, still water or air, or in rotting material. In Copenhagen in this period, the miasmatic view was still dominant, especially in the approach to urban space and planning.

This changed relatively suddenly with the discoveries of biologists such as Robert Koch and Rudolf Virchow, and with the hygienic movement in France and in particular Louis Pasteur.⁶⁰ With the new theories of the cell, the microbe and the revival of contagion from living organisms, the body emerged as a somewhat different entity. The borders between human and animal bodies as organisms were now unstable and fragile. First, Virchow’s cell theory made it probable that bodies were not wholes, but assemblies of millions of small, independent bodies, making up local zones of bodily tissue, whose condition determined the life or death of the body, human or animal, that they

⁵⁹ *Politiken*, 19 October 1890.

⁶⁰ Bruno Latour, *The Pasteurization of France* (Cambridge, Mass: Harvard University Press, 1993); Laura Otis, *Membranes: Metaphors of Invasion in Nineteenth-Century Literature, Science and Politics* (London: Johns Hopkins University Press, 1999).

sustained.⁶¹ With Robert Koch's theory of microbes travelling from body to body, this assembly – the human or animal body – became framed as an environment which provided habitats for a good many other living organisms, some of which were unhealthy for the hosting body, or simply killed it. The human and animal body in this period *surfaced* as permeable and fragile, unable to defend itself against the attacks from invisible hordes of invading life forms. The microorganisms that Koch and others had seen in their microscopes could transgress the skin, body openings, eyes or other entry points and enter the tissue, intestines or veins to exploit the potential for feeding and multiplying, thereby consolidating their invasion.

When it is emphasised that the permeable body is surfacing, it is because the field of bacteriology was still before World War One a "new" field. The new body became appropriated by the notions applied to Koch and Pasteur, and through these notions it was tied to the tension between the visible and the invisible. As Laura Otis notes, Koch "had identified the disease-causing agents by rendering them visible. He could eliminate diseases only if people themselves were equally available to his gaze".⁶² And Latour has a central remark on the same theme of a visual warfare concerning Pasteur. As he notes, the followers of Pasteur were

Like the first observation balloons. They made the enemy visible. Without replacing the armies, the battles, or even the commanding officers, they indicated or directed the blows.⁶³

This language of war, visibility and bordering shows the degree to which the body was becoming a space to be protected, but at this specific period the enemy was only partly visible.

The focus on contagion and health had a variety of consequences. Since the slaughterhouse was a node for the distribution of meat not only on a national, but also on an international scale, the state was concerned. From the 1870's and onwards, there was close contact between urban and state agents concerning these matters: the Ministry of Interior, the Royal Veterinary School, the City Police Director and regional administrators, among others.⁶⁴ At first regulations were discussed to control the animals shipped into the city harbour that could carry contagion. Shipping companies

⁶¹ Ibid., 12.

⁶² Ibid., 35.

⁶³ Latour, *The Pasteurization of France*, 34.

⁶⁴ The main source here is the correspondence concerning cattle illnesses, State Archives, Copenhagen Police 1865-1892, DG-001, F-60;61.

Meat City

had to load the animals into temporary stables at the harbour for examination by vets, after which they were taken to the slaughterhouse under the escort of police officers.⁶⁵ This quarantine space was the object of long discussions and was refined and developed over the years. Floors and cribs were made of concrete, walls were covered with glass and all cracks and joints were covered with pitch. In 1902, from January to October, 2,398 animals were inspected at this location.⁶⁶ The animals deemed to be dangerous were burned in a destruction facility built in 1890 at the Meat City.⁶⁷ Temporary stables were also set up in Istedgade, a street close to the Meat City, and routes were established for the police-escorted cattle to move between the different localities.⁶⁸ Thus, the enclosed and regulated slaughterhouse expanded and established quarantine points around the city, trying to keep up with the moving bacteria. This effort involved the state, the city and the local slaughterhouse officials, and was under keen public surveillance as we can see from the meat scandal case.

Concluding remarks

With the slow build-up of the Brown Meat City in Copenhagen, we can identify a spatial complex embodying the contradiction of modern urban meat provision: on the one hand, the consumption of meat, and especially pork, was rising to a new level in this period. The short version of the story is that the Danish urban population, rising as it was, became meat eaters to a historically high degree, with the citizens of the major cities as the leading group.⁶⁹ So we see a steep rise in consumption, especially in pork. On the other hand, meat was being taken effectively away from the public eye, in a rapid acceleration of a development that had begun centuries before.⁷⁰ With slaughterhouses in large cities beginning from the 17th century, the most comprehensive public project was the abattoirs of Napoleonic Paris. Even back in those days there was some focus on the hiding and erasing of the killing, butchering and bleeding processes that transform the living animal into dead meat.⁷¹ But still in Copenhagen in the early nineteenth century, living animals and dead meat were visible parts of everyday urban life. Then, quite suddenly, during the last half of the century, the

⁶⁵ Letters from the Ministry of the Interior February/March 1877 to the Copenhagen police director.

⁶⁶ Letters from the City Veterinary of Sept/Dec 1902 to the police director.

⁶⁷ Letter from veterinary inspector Hørring to the police director, August 1890.

⁶⁸ Letter from veterinary inspector of 1 August 1886.

⁶⁹ See figure 1. The next significant rise in meat consumption comes with the structural rationalisation of Danish pork production in the 1970's.

⁷⁰ Fitzgerald, 'A Social History of the Slaughterhouse: From Inception to Contemporary Implications', 60ff.

⁷¹ Vialles, *Animal to Edible*, 35ff.

city became cleansed of animals, living and dead, until they returned later as pets. In this way, as explained by Bulliet, a change occurred in the human-animal relationship from a domestic to a “postdomestic” culture.⁷² In the period around 1900, animals became the centre of attention as a commodity, but the production connected to this commodification had to be isolated from human bodies and public eye.⁷³

For social historian Amy Fitzgerald, postdomesticity and the contradictory relationship between the urban dweller and animal-as-meat are what define a more “modern sensibility”.⁷⁴ The concept, broad as it is, captures something about why we should bother to look at meat in the first place as a key phenomenon of urban modernity. The almost obsessive surveillance of shops, dead meat and quarantine spaces suggests an anxiety connected to both the discovery of the bacterial universe, but also to the contradictory presence of a rising desire for fresh meat and simultaneously an expanding repulsion in the face of everything caused by this desire – slaughtering, cutting up, examining meat and so on.

Along with this, and partly caused by the rise in Danish meat exports, from 1888 onwards it was compulsory to slaughter animals in public slaughterhouses, or abattoirs. Due to the need for infrastructure to carry both livestock in and dead meat out, the slaughter facilities had to be near road and railroad junctions, harbours and later electrical plants, all of which were the nodes around which the industrial cities grew. We can thus imagine the expanding consumption and exports creating an explosion in livestock from the transformed farmlands, all concentrated in the heart of the cities where animals had to be slaughtered in an invisible way.

⁷² Richard Bulliet, *Hunters, Herders and Hamburgers: The Past and Future of Human-Animal Relationships* (New York: Columbia University Press, 2005); Fitzgerald, 'A Social History of the Slaughterhouse: From Inception to Contemporary Implications'.

⁷³ The notion of the public eye is coined by Chris Otter, see Chris Otter, 'Making Liberalism Durable: Vision and Civility in the Late Victorian City', *Social History* 27 (2010), 1-15.

⁷⁴ Fitzgerald, 'A Social History of the Slaughterhouse: From Inception to Contemporary Implications', 58.