

# **Land of Milk and Butter. The Economic Origins of Cleanliness in the Dutch Golden Age.**

Bas van Bavel  
Oscar Gelderblom

Utrecht University

Draft, 17 September 2007

## **Abstract**

This paper explores why early modern Holland, and particularly its women, had an international reputation for cleanliness. Between 1500 and 1800 numerous travellers reported on the habit of housewives and maids to meticulously clean the interior and exterior of houses. We argue that it was the commercialization of dairy farming that led to improvements in household hygiene. In the fourteenth century peasants but also urban dwellers began to produce large quantities of butter and cheese for the market. In their small production units the wives and daughters worked to secure a clean environment for proper curdling and churning. We estimate that at the turn of the sixteenth century half of all rural households and up to one third of urban households in Holland produced butter and cheese. These numbers declined in the sixteenth century when peasants sold their land and larger farms were set up. Initially the migration of entire peasant families to towns, the hiring of farmers' daughters as housemaids, and the exceptionally high consumption of dairy continued to feed into the habit of regular cleaning in urban households. However, by the mid-seventeenth century the direct link between dairy farming and cleanliness was probably lost.

## Introduction<sup>1</sup>

In the early modern period the housewives and maid servants of the Dutch Republic were reputed for their cleanliness. Dozens of foreign travellers visiting in the seventeenth and eighteenth century noted how the interiors and exteriors of houses were meticulously cleaned.<sup>2</sup> Especially in Holland, the western-most part of the Republic, the women scrubbed and polished their windows, doorsteps, halls, stairwells, and kitchens every week. Streets were regularly cleaned and strewn with sand. In many towns and villages the cleaning extended to canals and market places. Why were the Dutch so concerned with cleanliness long before systematic improvement of public hygiene, or personal hygiene of the population at large, became a major issue in Western Europe, in the nineteenth century?<sup>3</sup>

The origins of Dutch cleanliness have puzzled many. Contemporary observers linked the feverish cleaning of houses, streets, and ships to the humidity of the Dutch climate. Regular scrubbing would prevent furniture and wooden floors from moulding and rotting.<sup>4</sup> However, weather conditions were quite similar in other parts of the North Sea area where no such culture of cleanliness existed. Another possible explanation, that the densely populated towns of the Dutch Republic required inhabitants or their town magistrate to take appropriate hygienical measures, does not hold water either for living

---

<sup>1</sup> We would like to thank Gerard Trienekens, our former colleague at Utrecht University, for inspiring us to write this article, and for his comments on an earlier draft. We also thank Jean-Laurent Rosenthal (UCLA), Jan Bieleman (WAU), Mats Morell (Uppsala University), Jos Lankveld (WAU), Erika Kuijpers (UU), and Regina Grafe (LSE) for their comments and suggestions.

<sup>2</sup> The most recent overview on the topic in: Els Kloek, "De Geschiedenis Van Een Stereotype. De Bazigheid, Ondernemingszin En Zindelijkheid Van Vrouwen in Holland (1500-1800)," *Jaarboek van het Centraal Bureau voor Genealogie* 58 (2004). Older but with many detailed references is Boy Wander, "Zindelijk Nederland. Opmerkingen over De Hygiënische Toestanden in Ons Land Gevonden in Reisjournalen Van Vreemdelingen (1517-1810)," *Volkskunde* LXXV, no. 3 (1974).

<sup>3</sup> Even if scientific interest for cleanliness emerged only in the eighteenth century, a more general concern for personal and public hygiene existed much earlier; Georges Vigarello, *Le Propre Et Le Sale. L'hygiène Du Corps Depuis Le Moyen Age* (Paris: Seuil, 1985).

<sup>4</sup> Kloek, "Geschiedenis."19-20; Roelof Murrus, *La Hollande Et Les Hollandais Au Xvii Et Au Xviii Siècles Vus Par Les Français*, ed. MM. Baldensperger et Hazard, *Bibliothèque De La Revue De Littérature Comparée ... T. Xxiv* (Paris: H. Champion, 1925). 141; Wander, "Zindelijk Nederland." 188

conditions in other highly populated or urbanized parts of Europe were no different.<sup>5</sup> For want of a convincing material explanation for Dutch cleanliness, Simon Schama has argued that the frantic cleaning of Dutch housewives reflected a moral, Calvinist condition.<sup>6</sup> Women armed with buckets and brooms were symbols for the inner struggle with vanity, unbelief, and desires of the flesh. Besides, cleanliness was a proof of patriotism, a means to polish of past enemies. This state of mind could develop into a pervasive behavioural code due to the discipline embedded in the Calvinist faith, the moral lessons of popular writers like Jacob Cats, and social control from one's neighbours. Thus, according to Schama, Dutch cleanliness was inextricably linked to the cultural, religious and political peculiarities of the United Provinces.

Schama's symbolic explanation is at odds with chronology, however. For one thing, a concern for personal hygiene can be traced much further back in time. There is considerable evidence for the use of public bathing houses in late-medieval cities elsewhere in Europe.<sup>7</sup> An even more pervasive culture of cleanliness emerged in Renaissance Italy. In a recent study Douglas Biow shows the growing concern of Italian writers in the fifteenth and sixteenth century for personal hygiene, clean houses, and tidy urban spaces. He emphasizes cleanliness as a rhetoric device, a *topos*, used by Italian writers as antidote to their rapidly changing social, cultural, and political environment.<sup>8</sup> But Biow also demonstrates how clothes and linen washed in soap were used to cleanse the body, while maids regularly cleaned their masters' houses – kitchens in particular.<sup>9</sup>

---

<sup>5</sup> The explanation was first voiced by Sir William Temple, *Observations Upon the United Provinces of the Netherlands*, trans. Sir George Clark, 2 ed. (Oxford: Clarendon Press, 1672 (1972)). 80.

<sup>6</sup> The following is based on: Simon Schama, *The Embarrassment of Riches: An Interpretation of Dutch Culture in the Golden Age* (London: Collins 1987, 1987).381-388.

<sup>7</sup> Vigarello, *Le Propre Et Le Sale*. ; Dominique Barthelemy et al., *Histoire De La Vie Privee. Vol. Ii. De L' Europe Feodale a La Renaissance*, ed. Philippe Ariès and Georges Duby, vol. II, *Histoire De La Vie Privee* (Paris: Seuil, 1985-1987).

<sup>8</sup> Douglas Biow, *The Culture of Cleanliness in Renaissance Italy* (Ithaca: Cornell University Press, 2006). xvii.

<sup>9</sup> *Ibid.*14-15, 95-143.

Furthermore, town authorities went to great lengths to dispose of waste in the cities – a concern directly related to the recurrent outbreak of the plague.<sup>10</sup>

Still, there is a crucial difference between cleanliness in Italy and Holland. In the Italian city states cleanliness was confined to the higher echelons of urban society.<sup>11</sup> Ordinary workmen, the urban poor, or peasants were either ignored in contemporary texts, or used as a dirty contrast to the urban aristocracy, with peasants embodying the hallmark of dirtiness.<sup>12</sup> The only lower class expected to be immaculate were the maids that cleaned the houses of the bourgeois families.<sup>13</sup> In Holland, on the other hand, the cleaning mania concerned the houses of a much broader group of people both in towns and in the countryside. Several foreign visitors actually went on boat trips from Amsterdam to witness the cleanliness in the surrounding villages.<sup>14</sup> At the same time Dutch women may have been less concerned about personal hygiene. Several travellers criticized the use of spittoons in house or even at the dinner table, the eating without cutlery, and the absence of public baths.<sup>15</sup> Perhaps it was because of this observed lack of personal hygiene that not a single traveller felt there was a symbolic meaning to the cleaning frenzy of Dutch women in the sense proposed by Simon Schama.<sup>16</sup>

---

<sup>10</sup> Ibid. 11-13; Also Douglas Biow, "The Politics of Cleanliness in Northern Renaissance Italy," *Symposium* 50 (1996).

<sup>11</sup> Biow, *Culture of Cleanliness*; Cf. also Norbert Elias, *The Civilizing Process. The History of Manners.*, vol. 1 (Oxford: Basil Blackwell, 1979).

<sup>12</sup> Elias, *Civilizing Process*. 57, 64-65; Biow, *Culture of Cleanliness*. 23-29, 79. There were a few exceptions to this looking down on the ordinary man's filth. The fifteenth century Italian Leon Battista Alberti, referred to farms as "new and fresh and clean and good" (Biow, *Culture of Cleanliness*. 60). In late eighteenth century France, several writers considered stables with young animals the appropriate place for the sick to recover: Alain Corbin, *The Foul and the Fragrant. Odor and the French Social Imagination (Leamington Spa/Hamburg/New York: Berg Publishers, 1986)*. 37, 215.

<sup>13</sup> Biow, *Culture of Cleanliness*. 9-10, 70, 72-73.

<sup>14</sup> Wander, "Zindelijk Nederland." 183-188.

<sup>15</sup> On spittoons: Julia Bientjes, *Holland Und Der Holländer Im Urteil Deutscher Reisender (1400 -1800)* (Groningen: J.B. Wolters, 1967). 214; Anja Chales de Beaulieu, *Deutsche Reisende in Den Niederlanden : Das Bild Eines Nachbarn Zwischen 1648 Und 1795* (Frankfurt am Main ; New York: P. Lang, 2000). 142-143; C. D. van Strien and Dirk de Vries, *Touring the Low Countries : Accounts of British Travellers, 1660-1720* (Amsterdam: Amsterdam University Press, 1998). 21, 369; Murriss, *Hollande*. 141; On the bathing houses: Johannes Brouwer, *Kronieken Van Spaansche Soldaten Uit Het Begin Van Den Tachtigjarigen Oorlog, Etc* (Zutphen: W. J. Thieme & Co., 1933). 114; Only in Amsterdam a public bathing house was opened only in the late eighteenth century, to be closed again in 1817 (Wander, "Zindelijk Nederland." 186; Murriss, *Hollande*, 141)

<sup>16</sup> Kloek, "Geschiedenis."

But even if Schama rightly stresses the much more pervasive culture of cleanliness in Holland, the chronology of his argumentation remains problematic. For the earliest accounts of Dutch cleanliness date from before the Reformation and the Dutch Revolt. In 1567 Lodovico Guicciardini, a Florentine merchant and writer, noted the “order and tidiness that reign everywhere” in Holland. Citing conversations with several of Charles V’s courtiers, he added that a tidier place was nowhere to be found in Europe.<sup>17</sup> Also travellers’ accounts from 1514, 1517 and 1550 referred to the tidiness of private houses and public spaces.<sup>18</sup> “As for domestic furniture, Holland is unsurpassed in neatness and elegance”, wrote Erasmus as early as 1500.<sup>19</sup> Thus, it seems highly unlikely that Dutch cleanliness originated in Calvinistic morals or the patriotism of the Golden Age.

And yet Schama is able to cite compelling evidence from several contemporary emblems and literary sources that link the physical act of cleaning to the spiritual purity of Dutch women in the Golden Age.<sup>20</sup> Most notable among these are the *emblemata* that depict the labour intensive churning of butter as a metaphor for the purification of the soul. Only hard work could separate the cream, representing the spirit, from the whey, the carnal desires. It is an elegant metaphor, and one that was widely used by several writers, including Roemer Visscher, Jacob Cats, Joost van den Vondel, and Jan

---

<sup>17</sup> Lodovico Guicciardini and Bernardina Aristodemo, "Descrittione Di Tutti I Paesi Bassi. Edizione Critica" (University of Amsterdam, 1994 (1567)), p. 397: “Ma entrando poi per le lor case et conderando l’abbondanza delle masseritie d’ogni sorte, l’ordine, la pulitezza d’ogni cosa, si prende gran diletto et maggior meraviglia, et veramente che a tanto per tanto non è forse, in questo caso, cosa pari al mondo. Così ho udito dire io a vecchi forieri di Carlo quinto imperadore, i quali con Sua Maestà quasi per tutta l’Europa erano stati et, come ognuno sa, essi, che entrano per tutte le case in tutte le terre et luoghi dovunque vanno, meglio che gl’altri ne posson render ragione. Entra poi per quelle botteghe, vattene a’luoghi pubblici dove si lavora, mona in su le lor navi et finalmente condera gl’arigi [dijken], i ripari che fanno quelle genti, non solo per conservatione dell’isola, etc.....

<sup>18</sup> Wander, "Zindelijk Nederland." 180-181; Kloek, "Geschiedenis.", 6n, citing:

<sup>19</sup> Desiderius Erasmus, “*Auris Batava*” (1500), in: Herbert H. Rowen, *The Low Countries in Early Modern Times. Selected documents.* London/Melbourne: Macmillan 1972, 1-3

<sup>20</sup> Schama, *The Embarrassment of Riches : An Interpretation of Dutch Culture in the Golden Age.* 387-389; All in all, iconographers have identified seven emblems of churns alongside Dutch texts: <http://www.mnemosyne.org/mia/iconclass/4712232/>

Luycken.<sup>21</sup> However, we think the churn might point to a far more prosaic origin of Dutch cleanliness: the hygiene that was required for commercial dairy farming in Holland.

## I. Eyewitness accounts

To date historians have recovered more than 250 travel accounts of foreigners visiting the Northern Netherlands between 1438 and 1795.<sup>22</sup> No less than 75 of these mostly German, English and French travellers wrote about Dutch cleanliness.<sup>23</sup> Not all their descriptions are original. Many visitors read earlier accounts of travels through the Netherlands to prepare for their voyage, and some certainly pasted the observations of others in their own diaries.<sup>24</sup> Some scholars even argue that by the eighteenth century Dutch cleanliness had become a literary *topos* – a stereotype that was used either in praise

---

<sup>21</sup> The work of Roemer Visscher and Jacob Cats is discussed in detail by Schama. Joost van den Vondel used the dairy metaphor in his play *Leeuwendalers* "(...) En karnen, past een hart zoo rein, als melck en room (...)". For this and other dairy references in Vondels work, see: Marijke Meijer Drees, "Patriottisme in De Nederlandse Literatuur (Ca. 1650-Ca. 1750)" *De nieuwe taalgeids* 88 (1995).; For Jan Luycken an emblem in *Duytse Lier* [4.3]; Jan Luyken and A.N. Paasman A.J. Gelderblom, and J.W. Steenbeek (eds.) *Duytse Lier* (Emblem Project Utrecht, 2006 [cited June 2006 2006]); available from <http://emblems.let.uu.nl/emblems/html/lu1671004.html>.

<sup>22</sup> J. N. Jacobsen Jensen, *Reizigers Te Amsterdam. Beschrijvende Lijst Van Reizen in Nederland Door Vreemdelingen Voor 1850*. (Amsterdam: 1919). Cited in Chales de Beaulieu, *Deutsche Reisende.*, 62-63

<sup>23</sup> Most descriptions by foreign travellers date from the seventeenth and eighteenth century. (Wander, "Zindelijk Nederland." 192-197) presents a temporal distribution of the travel logs of foreign visitors mentioning on Dutch cleanliness:

Period	Cleanliness in Travel diaries
1500-1549	2
1550-1599	3
1600-1649	6
1650-1699	16
1700-1749	13
1750-1799	35

<sup>24</sup>As several historians have shown some of the more poignant 'proofs' of the cleanliness of Dutch maids and housewives were indeed part of a traveller's mythology. One example is the story of a maid who carried the mayor with dirty shoes from the doorstep to the stairwell to prevent him from dirtying the hallway. This incident, first recounted by the English ambassador William Temple in 1655, was copied by various later writers, whose poetic licence turned the magistrate into the husband, a town magistrate, a foreign visitor, or even the king of Prussia. (Schama, *The Embarrassment of Riches : An Interpretation of Dutch*

or mockery by Dutch writers and foreign visitors.<sup>25</sup> But there are simply too many original descriptions of the cleaning mania in town and countryside of eighteenth-century Holland to dismiss these as mere traveller's mythology.

One of the first things visitors of Dutch towns noted was the regular cleaning of the windows and doorsteps of private houses.<sup>26</sup> Those who were invited in, observed that halls and stairwells, front rooms and furniture, and especially the kitchen, its hearth, and dishes, were very neat and clean.<sup>27</sup> In one of the earliest known accounts of Dutch cleanliness (1517), the secretary of an Italian cardinal travelling in the Netherlands, already mentioned the mopping of floors and the wiping of feet before entering a private house.<sup>28</sup> Bemused or bewildered later visitors added the habit of man and women to wear slippers inside, and even force their guests to do so.<sup>29</sup> But it was not just private houses that were kept in order. Public spaces were equally well cleansed. As early as 1550 yet another visitor, Nicolaes Wimman, struck by Amsterdam's tidiness.<sup>30</sup> Later visitors made similar remarks about the streets and markets of the principal towns of Holland, and a few others in neighbouring provinces.<sup>31</sup> Travellers also lauded the cleanliness of the barges and inns they used whilst travelling.<sup>32</sup>

Taken together a clear pattern of cleanliness emerges from the travellers' accounts. Cleaning was a women's affair with either the housewife or her maidservant(s)

---

*Culture in the Golden Age.*, 380; Murriss, *Hollande.*; Kloek, "Geschiedenis." 14)

<sup>25</sup> Kloek, "Geschiedenis." Surely some observations, like the use of slippers, or the maids carrying visitors on their back, did take on mythical proportions. Also: Wander, "Zindelijk Nederland."

<sup>26</sup> Wander, "Zindelijk Nederland." 180; Bientjes, Bientjes, *Holland.* 214

<sup>27</sup> Murriss, *Hollande.* 138-141; Chales de Beaulieu, *Deutsche Reisende.* 140)

<sup>28</sup> Wander, "Zindelijk Nederland." 180-181

<sup>29</sup> (Murriss, *Hollande.* 137, 139; Chales de Beaulieu, *Deutsche Reisende.* 141; Strien and Vries, *Touring.* 326)

<sup>30</sup> **Check** Wimmans geographical background Wander, "Zindelijk Nederland." 178

<sup>31</sup> Murriss, *Hollande.*, 137-138; Positive and negative accounts of Amsterdam in Chales de Beaulieu, *Deutsche Reisende.*, 139-140; Strien and Vries, *Touring.* 25, 34, 43, 123, 145, 147, 185, 190, 319, 322, 326, 327, 332, 355

<sup>32</sup> Admittedly the feelings about barges and inns were slightly more mixed, with some travellers complaining about poor hygiene (Wander, "Zindelijk Nederland." 172-175; Chales de Beaulieu, *Deutsche Reisende.* 144). Likewise, a few Frenchmen noted that canals in Amsterdam were used to dispose of waste, while markets at the time of the annual fair were not too clean either. (Murriss 141-142)

scrubbing and polishing.<sup>33</sup> Several visitors of private houses were confronted with maids forcing them to wear slippers, or flat out refusing them entry. A German traveller in 1753 mockingly observed that half of all women were continuously washing.<sup>34</sup> In doing so, they worked a weekly schedule, with the Saturday for the most thorough cleaning.<sup>35</sup> The maids' involvement probably had a long pedigree, for already in 1498 the magistrate of Amsterdam determined that maid servants were required to clean the doorsteps of their masters' houses.<sup>36</sup>

Furthermore, the cleaning frenzy seems to have been confined to a small part of the country. In the sixteenth century Lodovico Guicciardini explicitly associated order and neatness with the province of Holland, and so did visitors in a later period.<sup>37</sup> One might argue that this was because foreign travellers spent most of their time in the triangle between Rotterdam, The Hague and Amsterdam, that is, in Holland. However, even those who travelled in other provinces of the Dutch republic noted that it was nowhere as clean as in Holland, perhaps with the exception of Friesland.<sup>38</sup> In the later eighteenth century some foreigners insisted that especially the northern part of the province of Holland was kept very clean.<sup>39</sup>

Because most foreigners travelled from town to town, their observations on cleanliness typically concerned the urban environment.<sup>40</sup> Yet, foreigners who ventured into the countryside were equally struck by the cleanliness. In Zaandam visitors were surprised to find that cattle and carts were not allowed on the streets of Zaandam.<sup>41</sup> The extreme cleanliness of Broek in Waterland led French visitors in the first half of the

---

<sup>33</sup> Kloek, "Geschiedenis."; Murrís, *Hollande*. 138-139

<sup>34</sup> Bientjes, *Holland*. 213

<sup>35</sup> Murrís, *Hollande*.138; Wander, "Zindelijk Nederland."180

<sup>36</sup> \*\*\* p. 340

<sup>37</sup> Guicciardini and Aristodemo, "Descrittione Di Tutti I Paesi Bassi. Edizione Critica". 397

<sup>38</sup> Wander, "Zindelijk Nederland.", 172; Strien and Vries, *Touring.*, 126, 145, 147, 367

<sup>39</sup> Wander, "Zindelijk Nederland."179

<sup>40</sup> Ibid. 172

<sup>41</sup> Chales de Beaulieu, *Deutsche Reisende.*, 141

eighteenth century to dub this dairying village “*le temple de la propreté hollandaise*”.<sup>42</sup> Several French and German travellers in 1705, 1750, and again 1795 noted that stables and abattoirs were meticulously cleansed, and that farmers in Holland washed and sponged their cows, cutting their tails to prevent them from fouling themselves.<sup>43</sup>

To many foreigners the excessive cleaning remained a strange, sometimes laughable habit they had difficulty explaining. We already saw how their explanations, and those put forward by modern scholars, do not hold in the light of comparative analysis, both spatially and chronologically. There is, however, one other possible link that we will further investigate here. Towards the end of the eighteenth century, some visitors speculated about the economic needs for cleanliness. More specifically, a German professor of veterinary medicine noted in 1779 that cleanliness in stables was very important for dairying. In his view it explained why Dutch butter was so much better than German butter.<sup>44</sup> His fellow countryman Heinrich von Barkhausen, who in that same year visited a farm near Broek in Waterland was of similar conviction. He described the great speed and hygiene with which milkmaids churned, and speculated that Germans taking similar good care would be able to produce butter of equal quality. The higher price this fetched would compensate for their extra efforts.

Indeed, one of the earliest known commentators on Dutch cleanliness might have been aware of a direct link with dairying. When Antonio de Beatis wrote in 1517 how the Dutch kept their body and clothes clean, sanded their floors, and put cloths to wipe their feet on every doorstep, it was the last sentence in a paragraph on Dutch

---

<sup>42</sup> Wander, "Zindelijk Nederland." 179; Murriss, *Hollande*.138. One might doubt whether this village in one of the principal dairy regions was representative for in the seventeenth century it had become a retreat for wealthy Amsterdammers. J.H. Kernkamp, "Bengt Ferner's Dagboek Van Zijne Reis Door Nederland in 1759," *Bijdragen en Mededeelingen van het Historisch Genootschap* 31.. However, even if several foreigners mocked the village for its unnatural appearance, there is ample evidence that it continued to play an important role in the provision of Amsterdam with cheese and fresh milk (Dimphéna Groffen, "De Broeker Kaasmarkt, 1858-1876," *Broeker Bijdragen* 43 (2003).; J.W. Niemeyer, "Achttiende-Eeuwse Buitenlandse Toeristen En Hun Reisverslagen," *Broeker Bijdragen* 37 (1996).).

<sup>43</sup> The descriptions are found in accounts dating from 1705, 1750 and 1795 (Murriss, *Hollande*.140); Cf. also Bientjes, *Holland*.

agriculture, and dairy farming in particular. He noted the ‘delightful’ pastures and the large number of cows and sheep, and observed “the farmers make good cheese, one of which resembles cheese spread, though it is eaten after a few days – not fresh (...).”<sup>45</sup> Could it be that Holland’s early specialization in commercial dairy production induced improved hygiene in farms, houses, and stables?

## II. Dairy Farming and Hygiene

Cleanliness is of paramount importance for the production of butter and cheese. Cows have to be milked with proper care to prevent the transmission of diseases between them. Small farmers may have to save up raw milk for several days before they can start dairying. Without the use of modern equipment the production of butter and cheese will also take several days, it will require repeated transfer of intermediate products in different tubs and vessels.<sup>46</sup> Throughout this process infection by foreign micro-organisms can spoil the result. Butter and cheese produced without proper care will perish more quickly, and therefore will be unsuitable to sell over long distances.

Cleanliness is especially important for the making of butter. After collecting the day’s milk in wooden pails, the milk has to be poured in flat wooden vessels and put in a cold place to allow cream to separate and rise to the surface. It can take up to three days before sufficient cream has formed. It is then scooped off, and transferred to a warmer place to turn sour, and then to be churned in a large keg. After churning, sometimes taking up to several hours, the butter clots are kneaded in yet another tub before being

---

<sup>44</sup> Chales de Beaulieu, *Deutsche Reisende*, 111

<sup>45</sup> H. Enno van Gelder, "Een Italiaansch Reiziger over Ons Land in 1517," *Oud-Holland XXXV* (1917), 27

<sup>46</sup> Cf. for descriptions of artisanal butter and cheese making: P.N. Boekel, *De Zuivelexport Van Nederland Tot 1813* (Utrecht: 1929).; Nanne Ottema, *Het Oude Zuivelbedrijf in Het Friesch Museum* (Friesch Genootschap van Geschied-, Oudheid- en Taalkunde

stored in a cool place again. Artisanal production of cheese is less laborious but still requires a careful handling of the product. To make cheese, milk is first poured into a large tub, after which lactic acid is added, causing the milk to gel. When the gel is firm enough, it is cut with knives to obtain curd. This granular substance is then warmed up, wrapped in cloth, put in wooden tubs, and put under cheese presses. When ready the cheeses are put in a pickle bath and then put on shelves for several months to dry and ripen.

Today the importance of high standards of hygiene for a successful, profitable dairy industry are well understood, witness for example the concern of the World Food Association for the poor hygiene on millions of small-scale dairy farms in India and other developing countries.<sup>47</sup> There is a clear scientific knowledge of the risk of contamination of raw milk by dirty udders, hands, milking equipment, and storage vessels. This will lead to the growth of bacteria, yeasts and moulds that makes milk and dairy products taste bad or even spoils them. It is well understood that close monitoring of the temperature of storage and processing, clean work places and instruments, and limited humidity will contribute to the quality, taste, and preservation of dairy products.

The understanding that dairying benefits from proper hygiene is much older, however. The creation of dairy factories in the late nineteenth and early twentieth century built on the application of mechanical engineering, and the discovery of micro-organisms, which in turn led to the invention of pasteurization.<sup>48</sup> But long before a truly scientific approach to dairying, farmers were aware that the temperature and cleanliness of the workspace mattered. Already in the 1860s Dutch farmers had begun to set up

---

Frische Maatschappij van Landbouw, 1926).

<sup>47</sup> Anthony Bennett et al., "Report on the Fao E-Mail Conference on Small-Scale Milk Collection and Processing in Developing Countries, 29 May to 28 July 2000" (2001).

<sup>48</sup> {Bieleman, 1992 #667; Bieleman, 2005 #1593} Cf. for example the extensive treatment of matters related to hygiene in early-twentieth century handbooks for dairy production: W. Fleischman, *Lehrbuch Der Milchwirtschaft*, 5, revised ed. (Berlin: Verlagsbuchhandlung Paul Parey, 1915).; B. van der Burg and S. Hepkema, *De Boterbereiding Aan De Fabriek*, 2 ed. (s-Gravenhage: Algemeene Nederlandsche Zuivelbond, 1914).. In the first half of the twentieth century in the Netherlands several societies and journals for milk

large reservoirs placed in ice cold water to speed up the skimming, and they introduced thermometers to monitor the milk's temperature while churning. Their wives, daughters and maids were educated to keep stables tidy, wash their hands before milking, churning and kneading, and regularly clean their utensils, preferably with chalk.<sup>49</sup>

The importance of hygiene had been acknowledged before, however. Eighteenth-century agronomists, including the German veterinaries who visited Holland, were well aware of the relationship between cleanliness and the quality of butter and cheese.<sup>50</sup> In 1768 a French *intendant de commerce* noted that butter made on farms near the small town of Gournay in the northwest of France was “very much appreciated in Paris ... [reflecting] the qualities of the pastures and the cleanliness of the dairies and all the pots that are used”.<sup>51</sup>

Dairy farmers had several good reasons to pursue cleanliness. Besides preserving the health of the cows that provided their livelihood, cleanliness improved the quality of milk, butter, and cheese, it made them keep longer, and hence allowed the marketing of the products. This economic rationale was spelled out by none less than Adam Smith in the *Wealth of Nations* (1776) when he talked about the backwardness of Scottish dairy farming in the second half of the eighteenth century.<sup>52</sup> He argued that a farmer could not drink all the milk of their cows and therefore made butter and cheese for future

---

hygiene were established:

<sup>49</sup> M.S.C. Bakker, “Boter”, in: H.W. Lintsen, *Geschiedenis van de Techniek in Nederland. De wording van een moderne samenleving 1800-1890. Deel 1. Techniek en modernisering. Landbouw en voeding*, (Zutphen: Walburg Pers 1992), 103-134.

<sup>50</sup> **Check: Arthur Young. Also William Marshall**, *The rural economy of the West of England +++ The rural economy of Gloucestershire : including its dairy : together with the dairy management of North Wiltshire and the management of orchards and fruit liquor in Herefordshire*. London: Printed for G. Nicol, 1796.; On William Marshall, Stead, David. "William Marshall". *EH.Net Encyclopedia*, edited by Robert Whaples. November 19, 2003 (accessed January 3, 2007) URL <http://eh.net/encyclopedia/article/stead.marshall>; Other late eighteenth-century English writers linked the sloppy hygiene of English farmers whilst milking – unlike that of their maids – to the rapid spread of small pox among cattle herds. Edward Jenner, *An Inquiry into the Causes and Effects of the Variolae Vaccinae* (or Cow-Pox.) (1798)

<sup>51</sup> The intendant is cited in: Hugh Clout, "The Pays De Bray: A Vale of Dairies in Northern France," *Agricultural History Review* 51, no. 2 (2003)., 193

<sup>52</sup> Adam Smith and Edwin Cannan, *An Inquiry into the Nature and Causes of the Wealth of Nations* (London: Methuen & co., 1904).; his remarks on dairy production in Book 1, Chapter 11, p. 205

consumption by his family or to sell on the market. Smith believed the price he could fetch for his dairy products determined the cleanliness of their farms:

“If it is very low, indeed, he will be likely to manage his dairy in a very slovenly and dirty manner, and will scarce perhaps think it worth while to have a particular room or building on purpose for it, but will suffer the business to be carried on amidst the smoke, filth, and nastiness of his own kitchen; as was the case of almost all the farmers dairies in Scotland thirty or forty years ago, and as is the case of many of them still.”

Smith reasoned that if demand for butter grew, and prices went up, it created the incentive and the opportunity for producers to improve hygiene on their farms: “The increase of price pays for more labour, care, and cleanliness. The dairy becomes more worthy of the farmer's attention, and the quality of its produce gradually improves.”

Long before Smith wrote on Scottish cottagers, dairy farmers in Holland already practiced cleanliness whilst preparing butter and cheese. In 1664 the scholar and publicist Martin Schoock, also known as Schoockius wrote an extensive *Tractatus de Butyro* in which he described the then current method of butter making in Holland and Friesland.<sup>53</sup> Schoock punctuated his treatise with citations of ancient writers but he had lived in Holland for years, and claimed he was describing daily practice of the last two decades. The women, he wrote, used separate tools for the various stages of production. They thoroughly cleaned the churns and rinsed them with cold water before churning. When the butter was removed from the kegs it was transferred in well-washed wooden tubs, and the women then carefully washed their hands before they began to knead the butter, in order to remove all dirt from the hands. The cleanest women thought cold water was not good enough for this, so they used hot water. Furthermore it was general practise to dry the wooden pails and tubs before using them - not by exposing them to the sun, but rather with fires of straw or pods of beans. In early modern Holland sterilization of

---

<sup>53</sup> M. Schoockius, *Tractatus De Butyro Accessit Ejusdem Diatriba De Aversatione Casei* (Groningen: 1664)., esp. pp. 28-33 and 41.

butter and cheese making equipment was also practiced through heating in stoves on peat fires.<sup>54</sup>

The importance attached by dairy farmers to hand washing and the sterilization of their equipment was partly induced by what they could see as dirt, but at the same time experience has made them aware of impurities that could not be observed with the eye, as shown by these measures taken for sterilization. They knew very well that without proper care their milk would spoil and the butter they produced would be of inferior quality, fetching lower prices at the market. In his *Tractatus de Butyro* Schoock also explicitly referred to the detrimental effects of poor hygiene on the butter produced. For peasant families whose livelihood depended on dairy farming, this empirical knowledge was of vital importance.

It can be assumed that this knowledge went back further in time. Written evidence of this is found in an earlier work, referred to by Schoock, on agricultural practices in the German Rhineland. This *Rei Rustica* was first published in 1571 by Conrad Heresbach, the son of a German landowner-farmer, who lived and worked in Cleves on the eastern border of the Netherlands. His extensive work is a mixture of references to classical scholars and practical sixteenth-century experience. In the passages on dairy farming, he mentions – although less emphatically than Schoock does -, the importance of using clean milk for dairying, also because cheese made out of fresh and pure milk can be stored much longer and will not easily rot. Also, he stresses that the working-tables should be very clean and best be placed in a cool spot.<sup>55</sup>

There was more to cleanliness in early modern dairy farming than book knowledge, however. Many countrymen tried to improve dairy-making conditions by changing the layout of their farms. As early as the mid-sixteenth century farms in

---

<sup>54</sup> C. Cornelisse, PhD manuscript (2006), p. 197.

<sup>55</sup> Conradus Heresbachius, *Rei rusticae libri quatuor, universam rusticam disciplinam complectentes* (Colonia, 1570) esp. pp. 254-260.

Holland and Friesland had stables separated from the dairy chamber as well as purpose-built milk cellars facing north to prevent the curdling of raw milk, and secure low temperature storage.<sup>56</sup> In order to reduce temperatures, from the 1540s onwards the wooden ceilings of cellars were increasingly replaced by brick arched roofs. Especially the bigger farms in Holland operated separate rooms for the production and storage of butter and cheese, and some even had separate rinsing-rooms with paved floors to facilitate regular cleaning. Closed pots and barrels were introduced to better preserve butter, cheese was sealed in hard rinds to maintain their freshness, and in the seventeenth century metal buckets replaced the earthenware and wooden vessels used in the production process.<sup>57</sup>

The available evidence reveals a century old awareness of the importance of cleanliness for dairy farming in Western Europe. What is more, physical remains and early writings on the production of butter in Holland, show that hygiene was a principal concern for Dutch dairy farmers from at least the sixteenth century onwards. The question remains, however, how an experimental understanding of the importance of clean utensils, personal hygiene, and proper storage among dairy farmers could create Holland's far more general culture of cleanliness observed by foreign visitors after 1500? We believe this was a direct result of the large number of small dairy farmers that produced butter and cheese for domestic and foreign consumption.

### III. Land of milk and butter

---

<sup>56</sup> B.H. Slicher van Bath, "Een Fries Landbouwbedrijf in De Tweede Helft Van De Zestiende Eeuw," *Agronomisch-Historische Bijdragen* 4 (1958).; R.C. Hekker, 'De boerderijtypen in Zuid-Holland', Holland 18 (1986) pp. 158-180, and L. Brandts Buys, *De landelijke bouwkunst in Hollands Noorderkwartier (Arnhem, 1974)* pp. 97-99, 103-106 and 474-475. [E.L. van Olst, *Landelijke bouwkunst Noord-Holland (Arnhem, 1989)*]

<sup>57</sup> For increasingly specialized dairy instruments in Frisia: J. de Vries, 'Peasant demand patterns', in: W.N.

From the late fourteenth century onwards a growing number of households in Holland became involved in dairy farming. The production of large quantities of butter and cheese for local, regional and foreign markets was a consequence of the region's peculiar occupational history. The reclamation of land that started in the eleventh century had set in motion a gradual compaction and subsidence of the Dutch peat soils. The concomitant rise of groundwater levels made arable farming, and particularly the cultivation of bread grains, increasingly difficult up to the point of turning it into a losing proposition. In addition, the prevailing law of succession in combination with strong population growth caused the fragmentation of the initially large holdings owned by the first occupants, typically 13.5 hectares in size. This fragmentation eventually created ten-thousands of smallholdings, with half to two-thirds of the households having between two and seven hectares of land.<sup>58</sup> The small size of these farms combined with the rising groundwater level, made it virtually impossible for peasants to live of arable farming.

Yet despite these difficulties the peasants did not leave the area. Instead, they sought by-employment in a range of proto-industrial activities. By the mid-fourteenth century thousands of men worked for part of the year as peat diggers or fishermen. Smaller numbers of peasants were employed in brickworks, lime-kilns, shipyards, or rope-walks. Women supplemented household income through spinning and combing.<sup>59</sup> A further means to generate extra revenue was the substitution of the production of cheese and butter for the growth of bread grains. Dairy farming fitted not only the poor hydrological state of the land very well, but also the small size of land holdings, in view of its labour-intensive character and the possibility to thus use the surplus labour available within the households

---

Parker & E.L. Jones (eds.), *European peasants and their markets*.

<sup>58</sup> Compare the figures for the sixteenth century, with equal population numbers in the Holland countryside: J. De Vries, *The Dutch Rural Economy in the Golden Age, 1500-1700* (New Haven: 1974). 61-67; Balthassar Jozef Paul van Bavel, "People and Land : Rural Population Developments and Property Structures in the Low Countries, C. 1300-C. 1600," in *Continuity and change : a journal of social structure, law and demography in past societies* (2002).

<sup>59</sup> B.J.P. van Bavel, "Early Proto-Industrialization in the Low Countries? The Importance and Nature of Market-Oriented Non-Agricultural Activities in the Countryside in Flanders and Holland, C. 1250-1570,"

in a productive way. It sufficed to put one or two milch cows out to pasture for the peasant's wife to produce enough butter to sell on the market.<sup>60</sup>

Commercial dairy farming in Holland gained momentum after 1350 when the pedological problems were joined by a severe reduction of population numbers with the Black Death and a growing import of bread grains from the north of France, further depressed local grain prices and the profits of arable farming at that. At the same time, the population decline raised the purchasing power of urban middle groups, and stimulated their demand for luxury products such as cheese and butter.<sup>61</sup> Local governments responded to the improved prospects for dairy farming by providing the necessary commercial infrastructure and regulations for local dairy markets.<sup>62</sup> In the countryside of the *Noorderkwartier* – the northernmost part of Holland – a dozen weigh houses are mentioned for the first time between 1375 and 1400.<sup>63</sup> Some of them were specifically designed to allow the weighing of butter and cheese.

Dairy production in Holland in this period started to eclipse that in neighbouring areas, leading to exports to Brabant, Guelders and the German Lower Rhine area. An indication of the growth of commercial dairy production in this early period can be found in several toll accounts from the end of the fourteenth century. In the year 1394-95 some 9,000 Holland cheeses were registered at the tollhouse of Zaltbommel on the river Waal.<sup>64</sup> The toll accounts of Tiel, further upstream, show a total of 7,000 cheeses

---

*Revue Belge de Philologie et d'Histoire* 81 (2003), 1143.

<sup>60</sup>Ibid.; J. L. van Zanden, "A Third Road to Capitalism? Proto-Industrialisation and the Moderate Nature of the Late Medieval Crisis in Flanders and Holland, 1350-1550," in *Peasants into Farmers? The Transformation of Rural Economy and Society in the Low Countries (Middle Ages - 19th Century) in Light of the Brenner Debate*, ed. P. C. M. Hoppenbrouwers and J. L. van Zanden (Turnhout: 2001).

<sup>61</sup> B.J.P. van Bavel and J. L. van Zanden, "The Jump-Start of the Holland Economy During the Late-Medieval Crisis, C. 1350-C.1550," *Economic History Review* (2004).

<sup>62</sup> W.H.C. Knapp, "Botercontrole in Nederland. De Geschiedenis Van De Nederlandsche Botercontrole in Verband Met De Boterwetgeving En -Handel" (Landbouwhogeschool, 1927), 3-7

<sup>63</sup> J. Dijkman, 'Rural markets', paper 2006, pp. 21-22.

<sup>64</sup> J.C. Westermann, ed., *De rekeningen van de landsheerlijke riviertollen in Gelderland, 1394/1395*, Arnhem, 1939, pp. [xx-xx].

and several unspecified shipments of butter in that same period.<sup>65</sup> Despite the small distance between the two tollhouses there is surprisingly little overlap between their accounts. The thirty-odd shippers from Delft, Gorinchem, and occasionally Amsterdam, passing by Tiel carried their cheese to markets in Guelders and the Rhineland, while most ships calling at Zaltbommel probably departed for Bois-le-Duc in Brabant. This warrants the assumption, that by 1400 at least 15,000 cheeses per year were exported from Holland via the river Waal.

But the toll accounts of Zaltbommel and Tiel only reveal exports from the southern and eastern part of Holland. Some dairy may have been shipped from Gouda, and Dordrecht to Antwerp, or from Amsterdam overseas to Hamburg.<sup>66</sup> More importantly, butter and cheese produced in the north of Holland and Friesland were transported across the Zuiderzee to Kampen at the mouth of the river IJssel, and then carried further upstream to the dairy market of Deventer. A third toll account that survives from the years 1394-95, from the town of Zutphen, captures the shipments of cheese and butter from Deventer, on the IJssel, to German territories. These shipments, half butter and half cheese, brought no less than a quarter of total toll receipts here, and the value represented the equivalent of 340 barrels of butter, or some 50,000 kg.<sup>67</sup> Surely toll accounts do not suffice to estimate total production, but so much is clear that already before 1400 peasants in Holland produced for export markets.

Commercial dairy farming grew rapidly in the first decades of the fifteenth century. Between 1439 and 1441 the toll accounts of Kampen, at the mouth of the river IJssel, mention the shipment of 5,300 barrels of butter, 2,400 big cheeses, 97,000 small

---

<sup>65</sup> J.C. Westermann, ed., *De rekeningen van de landsheerlijke riviertollen in Gelderland, 1394/1395*, Arnhem, 1939, pp. 47-89. For an analysis of the quantitative data, cf. below pp. x-x.

<sup>66</sup> **Check Hamburg toll register of 1399/1400]** W.P. Blockmans, "The economic expansion of Holland and Zeeland in the fourteenth-sixteenth centuries", in E. Aerts a.o., eds., *Studia historica oeconomica*, Leuven, 1993, pp. 41-58.

<sup>67</sup> J.C. Westermann, ed., *De rekeningen van de landsheerlijke riviertollen in Gelderland, 1394/1395*, Arnhem, 1939, pp 252-264, and personal communication by Job Weststrate, Leiden University, 18 August

cheeses, and 5,000 unspecified loads of cheese.<sup>68</sup> These amounts equal at least 400 tons of butter and 425 tons of cheese per year, or the production of between 13,000 and 25,000 cows, depending on the annual milk yield of these cows.<sup>69</sup> And it was not just the dairy trade with German lands that grew. In the later fifteenth century Dutch cheese made its big break-through on the fairs of Brabant, all but fully pushing away Flemish competition.<sup>70</sup> There is even some evidence to suggest that cheese and butter from Holland were sold in Denmark at the turn of the sixteenth century.<sup>71</sup> The long distances covered in this trade and the shipment of most dairy products during the hot summer and autumn months made hygiene in production of the utmost importance, particularly for the highly perishable butter, often already stored at the farm for longer periods in order to amass sufficient quantities to go to market.

In order to estimate the number of households involved in commercial dairy farming in Holland we must also consider the butter and cheese consumed by the Dutch themselves. Unfortunately, the earliest data on the consumption of butter and cheese is from the mid-sixteenth century. In the 1540s the occupants of the convent of Leeuwenhorst near Leyden ate 5.6 kilograms of butter, 10.4 kilograms of cheese, and 40 liters of (butter)milk per year.<sup>72</sup> To be sure, this was a diet of the well-to-do; the poor consumed probably much less.<sup>73</sup> If we assume that each person in Holland, rich and poor,

---

2006.

<sup>68</sup> Smit, 'Kamper pondtolregister', *Economisch-historisch jaarboek* 5 (1919); J. Dijkman, 'Rural markets', paper 2006, p. 24. Qualitative evidence suggests the dairy trade with German territories continued to thrive after 1450. **Check** *conflicts Deventer/Dutch cheese, 1475 with Job Weststrate*

<sup>69</sup> The estimate is based on an average of 3 kilograms of butter produced per 100 liters of milk, and an average of 10 liters of milk for the production of 1 kilogram of cheese with 15% fat (including 10% milk spoil). The milk yields considered are 700 and 1,350 liters per cow per year. Compare the calculations of Roessingh in: Slicher van Bath, "Een Fries Landbouwbedrijf in De Tweede Helft Van De Zestiende Eeuw."

<sup>70</sup> Boekel, *De Zuivelexport*. 11-30, and Herman Van der Wee, *The Growth of the Antwerp Market and the European Economy (14th - 16th Centuries)*, 3 vols. (Leuven: 1963). I, pp. 218-224; II, pp. 102,122.

<sup>71</sup> V.R.IJ. Croesen, *De Geschiedenis Van De Ontwikkeling Van De Nederlandsche Zuivelbereiding in Het Laatste Van De Negentiende En Het Begin Van De Twintigste Eeuw* ('s-Gravenhage: N.V. Boek- en kunstafdrukkerij v/h Mouton & Co, 1931). 35

<sup>72</sup> G. de Moor, *Verborgten En Geborgen. Het Cisterciënzerinnenklooster Leeuwenhorst in De Noordvrijse Regio (1261-1574)* (Hilversum: 1994). 221-222

<sup>73</sup> Perhaps only a fifth, as can be induced from the relative size of the allowance for the sisters (41 pounds)

in 1500 ate no more than two kilograms of butter and four kilograms of cheese on average, it still required the milk of some 30,000 cows to supply them.<sup>74</sup>

Two government reports, the *Enquete* of 1494 and the *Informacie* of 1514, allow the first direct estimate of the number of households involved in dairy production at the time. In three-quarters of the villages in the central part of Holland keeping cows was explicitly mentioned as a way of earning a livelihood.<sup>75</sup> In most cases peasants combined this with other, often proto-industrial, economic activities. For example, in the eastern part of Holland the production of cheese often was combined by the peasant households with hemp cultivation, a combination expanding rapidly after the early 16th century. As for the livestock, a more detailed analysis at the village level shows that a quarter of all households had seven or more cows; one quarter had between four and six cows; another quarter between one and three cows; and finally there was one quarter of the village households without cows.<sup>76</sup> Most important in the light of our present purpose is that many people in small and medium-sized towns still kept cows. In Edam in 1462 and in Hoorn in 1472 one third of the households owned one or two cows, and one sixth even had three or more.<sup>77</sup>

Combined with available population figures this data would suggest that, by 1500, on an estimated total of 70,000 households in the province of Holland, some 25,000 rural households and 10,000 urban households may have produced butter and cheese,

---

and the poor (9 pounds) to buy milk after Leeuwenhorst's livestock was sold in 1544-1545 (Ibid. 347).

<sup>74</sup> We estimate the population at 275,000 people; the amount of milk required to produce 1 kilogram of butter at 33 litres; the amount of milk required to produce 1 kilogram of cheese at 10 litres; and the milk yield of one cow at 1,000 litres.

<sup>75</sup> Cf. *Enquete* (1494) and *Informacie* (1514). In the *informacie*, the keeping of cows is mentioned 130 times as way of earning a livelihood, as against the fattening of oxen 3 times, sheep farming 1 time, keeping sheep and cows 1 time, keeping cows and horses 7 times.: Jan Bieleman, *Geschiedenis Van De Landbouw in Nederland, 1500-1950 : Veranderingen En Verscheidenheid* (Meppel: Boom, 1992), 65-68.

<sup>76</sup> De Vries, *Dutch Rural Economy.*, 69-71, 137; C. Boschma-Aarnoudse, *Tot Verbeteringe Van De Neeringe Deser Stede* (Hilversum: 2003),. xxx-xxx.

<sup>77</sup> Boschma-Aarnoudse, *Tot Verbeteringe.*, pp. 138-140.

mainly for the market.<sup>78</sup> Since mainly women and daughters within the peasant households were responsible for the dairying, perhaps as much as half of the female population in Holland had a direct economic interest in the cleanliness of their living quarters. This may seem an improbably high estimate but the deep involvement in commercial dairy farming of Dutch households is confirmed by other sources.

In 1567 the Italian chronicler Guicciardini wrote in his *Descrittione di Tutti I Paesi Bassi* that the value of dairy produced in Holland equaled that of the spices imported from Portugal: two million guilders.<sup>79</sup> Depending on the relative share of butter in total production, the Dutch would have required anywhere between 90,000 and 140,000 cows to produce the necessary milk.<sup>80</sup> This is a credible number considering the total amount of land available at the time, and the number of cattle it could theoretically sustain. In the mid-sixteenth century Holland may have had some 270,000 hectares of agricultural land. A conservative estimate would be that 75%, or 200,000 hectares, consisted of pasture. Since every hectare of pasture in Holland could sustain at least one adult milch cow – and considerably more when stall-feeding – the land may have supported 200,000 cattle

---

<sup>78</sup> This estimation is based on the previously cited information from the *Enquete and Informacie*, in combination with the demographic evidence from the latter source, as summarized by Jan de Vries and Ad van der Woude: The total population of Holland in 1514 can be estimated at 275,000 people. In the countryside lived 141,000 people; in towns (including the Zaan region) lived 134,000 people. They assume an average size of 4 for each household. Jan de Vries and Ad van der Woude, *The First Modern Economy. Success, Failure, and Perseverance of the Dutch Economy, 1500-1815* (Cambridge: Cambridge University Press, 1997).

<sup>79</sup> Guicciardini and Aristodemo, "Descrittione Di Tutti I Paesi Bassi. Edizione Critica". 372: "I buoi vi sono bellissimi et grandissimi et le vacche parimente, le quali col lor latte tanto formaggio et tanto butiro producono che chi non è stato in sul luogo et vedutolo in qualche parte non lo crederebbe giamai. Certo è che il valore d'esso formaggio et butiro che in Hollanda si raccoglie, si mette con fondata ragione et osservatione in concorrenza con le spetierie, che in questi paesi vengono di Portogallo, le quali, comme nella descrizione d'Anversa s'è narrato, più d'un milione d'oro l'anno importano". For the evaluation of Guicciardini's estimates: Wilfrid Brulez, "De Handelsblans Der Nederlanden in Het Midden Van De 16e Eeuw," *Bijdragen en Mededeelingen over de Geschiedenis der Nederlanden* 21, no. 1 (1966-1967). 283n.

<sup>80</sup> We estimated the number of cows for several production schedules, with the share of butter production at 0%, 10%, 20% etc. Our calculations of the number of cows required are based on (1) the average price of butter and white cheese paid by St. Bartholomew's Hospital in Utrecht between 1560 and 1569 (quoted by N.W. Posthumus, *Nederlandse Prijs-geschiedenis*, 2 vols. (Leiden: 1964). Vol. 1, pp. 259-260; also available at: <http://www.iisg.nl/hpw/brenv.xls>); (2) the estimated milk yield of cows on the farm of Rienk Hemmema in Friesland in the early 1570s. i.e. 1,350 liters per year Sliether van Bath, "Een Fries Landbouwbedrijf in De Twede Helft Van De Zestiende Eeuw."; (3) the amount of milk required to produce 1 kilogram of butter (33 litres), and 1 kilogram of cheese (10 litres).

or more.<sup>81</sup> The keeping of these animals will have occupied tens of thousands of households.

The commercial production of dairy continued to dominate farming in Holland in the seventeenth and eighteenth century. In 1810, the first year for which a complete count of livestock in Holland survives, farmers owned a total of 230,000 milch cows.<sup>82</sup> Combined with the recorded much higher milk yield of 2,200 or 2,400 litres per cow, total dairy production must have at least quadrupled between 1550 and 1800. Yet despite this growth, the number of households producing dairy fell considerably. Between 1500 and 1650 many peasants lost their small plots of land to urban investors.<sup>83</sup> In 1560 burghers already possessed 30 to 35% of the total land area, and they continued to buy properties. Large-scale reclamation projects in the early seventeenth century further stimulated urban ownership. With these changing property relations the once typical class of landowning peasants disappeared from Holland's countryside in the seventeenth century.<sup>84</sup>

The organization of Dutch dairy farming changed as well. Most urban landowners had no direct interest in farm enterprise as such, and chose to lease their land to tenant farmers who set up their farms on a much larger scale. Many switched to the production of cheese and built larger, separate stables and dairy rooms. The farmers continued to work with their wives and daughters and the larger farms hired additional

---

<sup>81</sup> One thoroughly researched area, the *Zeevang* district north-east of Amsterdam, had 2,800 hectares of agricultural land and between 2,100 (in 1462) and 2,300 (1554) cows. Based on these figures and the amount of pasture land available at the time, Holland could have had as many as 200,000 cows – though one has to appreciate the very distinct pastoral specialization of the *Zeevang*. Boschma-Aarnoudse, *Tot verbeteringe*, pp xx-xx

<sup>82</sup> Van Zanden, *De economische ontwikkeling van de Nederlandse landbouw*, 100. In the period 1773-1805, Holland counted on average 180-190,000 head of cattle older than three years, so potentially milk-yielding (A.M. van der Woude, *Het Noorderkwartier*, pp. 554-561.)

<sup>83</sup> B.J.P. van Bavel, 'Rural development, landownership and tenurial rights in Holland (14th-17th centuries)', and Id, 'Land, lease and agriculture'.

<sup>84</sup> J. L. van Zanden, *The Rise and Decline of Holland's Economy : Merchant Capitalism and the Labour Market* (Manchester, UK ; New York: Manchester University Press : Distributed exclusively in the USA and Canada by St. Martin's Press, 1993); Bavel, "Early Proto-Industrialization."

hands and milk maids.<sup>85</sup> At the same time, the number of households producing dairy dropped. If we assume an average of 20 dairy-cows per farm we may estimate the total number of households directly involved in dairy production in 1800 at 10,000, or ten per cent of all rural households.<sup>86</sup>

#### IV. The origins of Dutch cleanliness

Dairy farming may have set new requirements for hygiene in and around farmhouses but how could this create a general culture of cleanliness in Holland? How could the production of butter and cheese change the standards of hygiene in all households – including those of urban dwellers? Surely, dairy was produced in great quantities in many parts of early modern Europe, including coastal Flanders, Normandy, Artois, various parts of England and Scotland, Denmark, Sweden, German territories, and Switzerland. Yet, contemporaries hardly ever praised or ridiculed the women and maids in these areas for their meticulous scrubbing and polishing. Why then would Dutch dairy farming have created a general culture of cleanliness? A tentative comparison with these other dairy regions reveals the particular set of circumstances that forged the direct link between dairying and cleanliness.

First of all, Dutch peasants in Holland produced ever larger quantities of butter from the late fourteenth century onwards. The making of butter was far more sensitive to poor hygiene than cheese. Indeed, many cheeses made of raw milk are deliberately

---

<sup>85</sup> For example, the village of Graft in 1680 counted 40 dairy farmers fully specialized in the production of cheese. These farmers employed another 40 male and female workers. Van Deursen, *Een dorp in de polder*, 57-60.

<sup>86</sup> In the sixteenth century the biggest farmers already owned ten or more cows. In the seventeenth century the livestock per farm grew even further due to better grass seeds, more manuring, and stall-feeding with oil-cakes, clover and hay, all of which allowed for higher stocking densities **Check:** *In some villages, averages were even higher, as in Vrijenban, where the 14 households held 16 cows on average. [1514 or 1560? De Vries, Dutch rural economy, p. De Vries, Dutch Rural Economy. 69-71?]*

moulded to enhance their flavour.<sup>87</sup> The taste of butter and its keeping qualities are especially important for dairy farmers who aim at marketing in distant places. This is a second key feature of Dutch dairy farming. Farmers and their wives observed proper hygiene while milking, churning, and storing because it improved the quality of the butter, and thus fetched a higher price on the extensive domestic and foreign markets they operated on.

This peasant production of butter for distant markets was not self-evident. In various English counties peasants produced dairy long before 1500 but their butter and cheese, if it was at all destined for the market, seldom went beyond the nearest town.<sup>88</sup> Consider also Adam Smith's comments on the poor hygiene of the Scottish cottagers that could not even sell their butter on the market. But then, if the production of butter for distant markets induced better hygiene, why did not coastal Flanders or coastal Normandy, with their highly commercialized dairy farms, develop a culture of cleanliness? Here, cheeses like Brie and Camembert, and especially butter, were produced for the market in large quantities from at least the fifteenth century onwards. This is where a third factor comes into play. The production in these regions was concentrated on large farms, which limited the number of households churning butter and making cheese.<sup>89</sup> For instance, in the polders of coastal Flanders in the seventeenth century farms had sixteen head of cattle on average.<sup>90</sup> The English dairy producers that began aiming for more distant markets in the seventeenth century all had large farms.<sup>91</sup>

---

<sup>87</sup> Cf. for example: Dick Whittaker and Jack Goody, "Rural Manufacturing in Rouergue from Antiquity to the Present: The Examples of Pottery and Cheese," *Comparative Studies in History and Society* 43, no. 2 (2001).

<sup>88</sup> Richard Britnell, *Britain and Ireland 1050-1530* (Oxford: Oxford University Press, 2004). 213, 421-422

<sup>89</sup> We still need to check farm sizes in the Isigny region in Normandy.

<sup>90</sup> Laurent Hoornaert, *Boter en kaas in de kasselrij Veurne(16<sup>de</sup> – begin 19<sup>de</sup> eeuw)*, scriptie UGent, 1996/1997, te vinden op internet, chapter 6.

<sup>91</sup> P.R. Edwards, "The Development of Dairy Farming on the North-Shropshire plain in the Seventeenth Century " *Midland History* 4, no. 2 (1977). Consider also the practice in some parts of England to hand over the milking of one's cows to a specialized dairymen – a practice that severed any direct link between hygiene on individual farms and the dairying process: {Horn, 1978 #1592; Mingay, 1990 #1591}

For a general culture of cleanliness to emerge the total number of households directly involved in dairy farming has to be big. This was certainly the case in Holland where in the fifteenth and sixteenth century up to half of all peasant households, owned cows. With 35,000 peasant households making cheese and butter in 1500, the number of women in Holland with a direct interest in cleanliness was much higher than in other dairy regions. What remains then is the question why a culture of cleanliness was as manifest in Dutch towns as it was in villages. One simple answer is that around 1500 a considerable number of urban dwellers still owned one or more dairy-cows. Especially in the smaller towns up to one third of the population kept cows for small-scale dairy production. This practice disappeared in the sixteenth century when the further growth of dairy production in the countryside allowed urban dwellers to buy rather than produce butter and cheese.<sup>92</sup> But even if the growing commercialization of the Dutch rural economy ended the towns' involvement in agriculture, this transformation of the countryside stimulated urban cleanliness in a number of other ways.

First there was the massive rural-urban migration that characterized Holland between the fourteenth and sixteenth centuries onwards. This migration was the result first of the ecological problems and later also the ongoing specialization of Dutch agriculture and the concomitant de-industrialization of the countryside. These developments led rural dwellers, and their habits, to move to the towns.<sup>93</sup> Leiden, for instance, received no less than circa 230 persons per year on average in period 1364-1415, overwhelmingly poorer people from the surrounding countryside, and similar figures apply for the nearby city of Gouda.<sup>94</sup> A related explanation lies in the maids that were hired by the urban middle class to do household work. Before the arrival of

---

<sup>92</sup> One notable example is that of Amsterdam's Civic Orphanage which in the first quarter of the seventeenth century did away with the twenty milk cows it had to feed the children. Thereafter all dairy was bought from outsiders. (McCants\*\*\*)

<sup>93</sup> **Could we** cite literary sources to substantiate this claim?

<sup>94</sup> D.E.H. de Boer, *Graaf En Grafiek. Sociale En Economische Ontwikkelingen in Het Middelleeuwse 'Noordholland'*

German and later Norwegian girls, in the seventeenth century, these were largely girls or young women from the Dutch countryside, probably mainly from proto-industrial families, leaving home at the age of about fifteen, and often returning when ready to start their own family. Many of these girls must have had experience with dairying and the hygiene it required.

Meanwhile dairy products had become an important item in the daily diet of a large part of Holland's urban population. Dutch cookery books from the late fifteenth and early sixteenth century already reveal a wide variety of dishes prepared with butter, cheese, cream, buttermilk, and even fresh milk that was either cooked or curdled before consumption.<sup>95</sup> The proper storage of these products and the actual preparation of the meals required sufficient hygiene.<sup>96</sup> To supply the growing urban population large quantities of butter, cheese, milk, and buttermilk had to be shipped from the countryside, which in turn required proper hygiene during transport and display on local markets.<sup>97</sup> This is evident from the many government regulations for weighing, packaging and delivery of butter, in particular.<sup>98</sup>

Thus, our analysis bears out a number of elements that made Holland exceptional in forging a direct link between dairy farming and cleanliness. The production of dairy changed hygiene in rural areas because a very large share of the population, organized in small-scale production units, produced dairy for local, regional, and foreign markets.

---

*Tussen Ca. 1345 En Ca. 1415* (Leiden: 1978), 135-164.

<sup>95</sup> J.M. van Winter, "The Consumption of Dairy Products in the Netherlands in the Fifteenth and Sixteenth Centuries" in *Milk and Milk Products from Medieval to Modern Times: Proceedings of the Ninth International Conference on Ethnological Food Research*, ed. Patricia Lysaght (Edinburgh: Canongate Academic, 1994); R. Janssen-Sieben & J.M. van Winter, *De keuken van de late Middeleeuwen* (Amsterdam, 1989) p. 32.

<sup>96</sup> See for example the advice given in a popular maids' manual in 1756: *De Ervarene En Verstandige Hollandsche Huysboudster. Ondernemende Alle Jonge Vrouwen, Hoe Zy Zich in 't Bestuuren Van Het Huysbouden Moeten Gedragen, Door Ieder Zyn Plicht Wel Te Doen Waarneemen. ... Dienende Tot Een Volmaakte Ondernemende in Deze Grootte En Nuttige Kunst, En Zonder Welkers Kennisse, Alle Boeken, Dewelke Van De Kook-Kunst En Diergelyke Wetenschap-Schappen Handelen, Vruchteloos Zyn*, 2 ed. (Amsterdam: N.T. Gravius, 1795 (1753, 1965)).

<sup>97</sup> Groffen, "De Broeker Kaasmarkt, 1858-1876."

<sup>98</sup> Boekel, *De Zuivelexport, Croesen, De Geschiedenis Van De Ontwikkeling Van De Nederlandsche Zuivelbereiding in Het Laatste Van De Negentiende En Het Begin Van De Twintigste Eeuw*. 36-38.

Equally important was the peasants' specialization in butter making, for this product required even higher sanitary standards than cheese. Domestic hygiene in towns improved because a considerable number of urban dwellers kept cows. When this practice began to disappear in the sixteenth century, the hiring of peasant daughters as maid-servants, the immigration of rural families, and the regular consumption of large quantities of (butter)milk, butter, and cheese continued to feed into urban habits of cleanliness. This specific combination of factors seems to have been absent from most other dairy regions in early modern Europe, perhaps with the exception of parts of Normandy and Switzerland.<sup>99</sup>

In the Pays de Bray, an area on the eastern fringe of Normandy, the agriculturalists, from big farmers to small peasants, specialized in butter production for the Paris market in the seventeenth and eighteenth centuries. Of the estimated 10,000 rural households in this area even the poorest ones often held one or two cows for butter production, using their grazing rights on the commons for this purpose. The farms here did have a reputation for cleanliness, with dairy rooms being meticulously cleaned, and with even the outdoor clogs being replaced on entering the underground dairy, as observed in 1820.<sup>100</sup> The only difference with Holland would seem to be in the overall scale of dairy production. The butter production of the Pays de Bray in 1820 required the milk of no more than 30,000 cows.<sup>101</sup>

In Swiss cantons dairying for the market began in the late-fourteenth century on small-scale farm holdings on the northern slopes of the Alps. Regions like Emmental and Greyerzerland (*Gruyère*) produced not only cheese but also butter for foreign markets,

---

<sup>99</sup> [Jon Mathieu navragen: literatuur hierover]

<sup>100</sup> J. Sion, *les payans de la normandie orientale* (Paris,1906) pp. 244-248, 260-282 and 388-392, and Clout, "The Pays De Bray: A Vale of Dairies in Northern France", *Agricultural History Review* 51 (2003).

<sup>101</sup> The reported butter production was 40,000 kilograms in 1820. We base our estimate of 25,000 cows, on an average annual milk yield of 2,500 liters per cow, and a requirement of 33 liters of milk for one kilogram butter.

just like the Bernese Oberland in the sixteenth century.<sup>102</sup> Most export was destined for the large cities in the north of Italy. Dairying in these areas was mainly done by small peasants. For example, in 1607 in cheese-producing Beaufortain 60 % of the cow-owning peasants possessed five cows or less.<sup>103</sup> In brief, with regard to dairy farming, these cantons had many things in common with Holland: the large share of the population involved in it, the small holdings of peasants, the distant markets for their products, and the butter specialization. The only difference with Holland may have been the lower level of urbanization. Whether the rural character of Switzerland, and, for that matter, Normandy, checked the creation of a general culture of cleanliness requires more research, however.

## Conclusion

In his *Embarrassment of Riches* Simon Schama has made a convincing case for a pervasive culture of cleanliness in Dutch society. The travel diaries, literary texts, emblems, and paintings he refers to leave little doubt about the cleaning efforts of Dutch women and their maids. According to Schama it was the will to temper carnal desires, perhaps in conjunction with a wish to exorcize Spanish tyranny, that spurred the scrubbing and brushing. It is quite possible that Calvinist beliefs strengthened the desire to clean in the Golden Age but they do not explain the origin of Dutch cleanliness. The simple reason is that the earliest reports on the phenomenon date from long before the Reformation and the Dutch Revolt.

Another possible explanation would lie in the urban character of Dutch society. Recent research on the culture of cleanliness that emerged in Renaissance Italy suggests

---

<sup>102</sup> B. Orland, 'Alpine milk', pp. 341-344. [N. Grass, 'Vieh- und Käseexport', in: *Wirtschaft des alpinen Raumes im 17. Jh.*] [R. Ramseyer-Hugi, *Das altbernerische Küherwesen* (1961)] [J. Hesli, *Glarner Land- und Alpwirtschaft* (1948)]

that the growth of cities, and the rise of urban elites in particular, may have set new standards for hygiene. Higher population densities may also have induced better sanitation. This story would seem to fit the Dutch case rather well in the sixteenth and seventeenth century because towns grew rapidly and a broad and powerful urban middle class emerged. The frugality and homeliness so characteristic of civic culture in Holland might have added to the outward appearance of Dutch women as frantic cleaners. Yet the fundamental problem with this explanation is the fact that cleanliness in Holland was a rural as much as an urban phenomenon.

In this paper we have argued that developments in material life seem to have shaped this cultural characteristic in a process that worked from the bottom upwards. The early commercialization of Dutch agriculture, and dairy farming in particular, led to improvements in hygiene in a majority of households. In Holland in the fourteenth century, petty farmers began to produce large quantities of butter and cheese to sell both on the domestic market and beyond. To prevent perishing the dairy farmers, or rather their wives and maids, had to make sure the milk remained neatly separated from all kinds of dirt in their small farmhouses and stables. We estimate that by 1500 half of all rural households and up to a third of urban households were directly involved in dairy production. The prospected sale of their butter and cheese set high standards for the hygiene in the houses they lived and worked in.

Due to a lack of sources it is impossible to determine when exactly the Dutch culture of cleanliness emerged. The expansion of dairy exports after 1400, and the earliest observations of cleanliness shortly after 1500, would make the fifteenth century the most likely starting point. Since peasants continued to dominate dairy farming well into the sixteenth century several generations of women will have felt the need to tidy their (farm)houses. The direct link between dairy farming and cleanliness will have faded

---

<sup>105</sup> L. Fontaine, in: U. Pfister (ed.), *Regional development and commercial infrastructure*, pp. 57-xx, esp. pp. 63-64.

thereafter, however. Peasants lost their land to urban landowners, and dairy production shifted to large tenant farms. Total output grew and the need for thorough cleaning remained but it became increasingly confined to a smaller number of large farms.<sup>104</sup> Once the rural transformation was completed in the seventeenth century the migration of peasant families and farmer's daughters to towns stopped as well.<sup>105</sup> The daily trade and consumption of butter, milk, buttermilk, and cheese was the only direct link that remained between dairy farming and general hygiene.

Finally, tracing the economic origins of Dutch cleanliness helps to understand the complex relationship between culture and material life. On the one hand, this particular element of Hollands culture appears to have had a rural origin. So, even in a highly urbanized society dominated by burgher elites, country life could still influence the beliefs and habits of the population. This contrasts with widely held assumptions on a burgher culture that spread to the countryside in the late Middle Ages. On the other hand, our study demonstrates how social and economic reality influenced and shaped culture. Dutch artists used daily scenes in many of their emblems, plays, and paintings. This visual culture reflected deep ideological or religious concerns in some cases, but in others, like the cleanliness of Dutch women, it seems to have simply mirrored everyday life.

## References

Barthelemy, Dominique, et al. *Histoire De La Vie Privee. Vol. Ii. De L' Europe Feodale a La Renaissance*. Edited by Philippe Ariès and Georges Duby. Vol. II, *Histoire De La Vie Privee*. Paris: Seuil, 1985-1987.

---

104 In the sixteenth century, 17 cows would require the labour of a peasant household plus one or two milkmaids. De Vries, *Dutch Rural Economy*. 69-71??); Two centuries later, milking 9 cows and preparing the butter and cheese (churning and curdling) from these cows would require the full labour of one milkmaid. (Ibid. 137)

<sup>105</sup> B.J.P. van Bavel and L. Lucassen, "Een Differentiële Grens : Over De Integratie Van De Middeleeuwen in De Economische En Sociale Geschiedenis Van De Lage Landen," *Tijdschrift voor sociale geschiedenis* 2002. at 183; Zanden, *The Rise and Decline of Holland's Economy : Merchant Capitalism and the Labour Market*.

- Bavel, B.J.P. van. "Early Proto-Industrialization in the Low Countries? The Importance and Nature of Market-Oriented Non-Agricultural Activities in the Countryside in Flanders and Holland, C. 1250-1570." *Revue Belge de Philologie et d'Histoire* 81 (2003): 1109-1163.
- Bavel, B.J.P. van, and L. Lucassen. "Een Differentiële Grens : Over De Integratie Van De Middeleeuwen in De Economische En Sociale Geschiedenis Van De Lage Landen." *Tijdschrift voor sociale geschiedenis* 2002, 129-146.
- Bavel, B.J.P. van, and J. L. van Zanden. "The Jump-Start of the Holland Economy During the Late-Medieval Crisis, C. 1350-C.1550." *Economic History Review* (2004)
- Bavel, Balthassar Jozef Paul van. "People and Land : Rural Population Developments and Property Structures in the Low Countries, C. 1300-C. 1600." In *Continuity and change : a journal of social structure, law and demography in past societies*, 3-4, 9-37, 2002.
- Bennett, Anthony, et al. "Report on the Fao E-Mail Conference on Small-Scale Milk Collection and Processing in Developing Countries, 29 May to 28 July 2000." 2001.
- Bieleman, Jan. *Geschiedenis Van De Landbouw in Nederland, 1500-1950 : Veranderingen En Verscheidenheid*. Meppel: Boom, 1992.
- Bientjes, Julia. *Holland Und Der Holländer Im Urteil Deutscher Reisender (1400 -1800)*. Groningen: J.B. Wolters, 1967.
- Biow, Douglas. *The Culture of Cleanliness in Renaissance Italy*. Ithaca: Cornell University Press, 2006.
- . "The Politics of Cleanliness in Northern Renaissance Italy." *Symposium* 50 (1996): 1-13.
- Blundel, Richard, and Angela Tregear. "From Artisans To "Factories": The Interpenetration of Craft and Industry in English Cheese-Making, 1650–1950 " *Enterprise and Society* 4, no. 7 (2006): 705-739.
- Boekel, P.N. *De Zuivelexport Van Nederland Tot 1813*. Utrecht, 1929.
- Boer, D.E.H. de. *Graaf En Grafiek. Sociale En Economische Ontwikkelingen in Het Middeleeuwse 'Noordholland' Tussen Ca. 1345 En Ca. 1415*. Leiden, 1978.
- Boschma-Aarnoudse, C. *Tot Verbetering Van De Neeringe Deser Stede*. Hilversum, 2003.
- Britnell, Richard. *Britain and Ireland 1050-1530*. Oxford: Oxford University Press, 2004.
- Brouwer, Johannes. *Kronieken Van Spaansche Soldaten Uit Het Begin Van Den Tachtigjarigen Oorlog, Etc*. Zutphen: W. J. Thieme & Co., 1933.
- Brulez, Wilfrid. "De Handelsblans Der Nederlanden in Het Midden Van De 16e Eeuw." *Bijdragen en Mededeelingen over de Geschiedenis der Nederlanden* 21, no. 1 (1966-1967): 278-310.
- Burg, B. van der, and S. Hepkema. *De Boterbereiding Aan De Fabriek*. 2 ed. 's-Gravenhage: Algemeene Nederlandsche Zuivelbond, 1914.
- Chales de Beaulieu, Anja. *Deutsche Reisende in Den Niederlanden : Das Bild Eines Nachbarn Zwischen 1648 Und 1795*. Frankfurt am Main ; New York: P. Lang, 2000.
- Clout, Hugh. "The Pays De Bray: A Vale of Dairies in Northern France." *Agricultural History Review* 51, no. 2 (2003): 190-208.
- Corbin, Alain. *The Foul and the Fragrant. Odor and the French Social Imagination*. Leamington Spa/Hamburg/New York: Berg Publishers, 1986.
- Croesen, V.R.IJ. *De Geschiedenis Van De Ontwikkeling Van De Nederlandsche Zuivelbereiding in Het Laatst Van De Negentiende En Het Begin Van De Twintigste Eeuw*. 's-Gravenhage: N.V. Boek- en kunsttdrukkerij v/h Mouton & Co, 1931.
- De Ervarene En Verstandige Hollandsche Huysboudster. Ondernemende Alle Jonge Vrouwen, Hoe Zy Zich in 't Bestuuren Van Het Huysbouden Moeten Gedragen, Door Ieder Zyn Plicht Wel Te Doen Waarneemen. ... Dienende Tot Een Volmaakte Onderneming in Deze Groote En Nuttige Kunst, En Zonder Welkers Kennisse, Alle Boeken, Dewelke Van De Kook-Kunst*

- En Diergehyke Wetenschap-Schappen Handelen, Vruchteloos Zyn.* 2 ed. Amsterdam: N.T. Gravius, 1795 (1753, 1965).
- De Vries, J. *The Dutch Rural Economy in the Golden Age, 1500-1700.* New Haven, 1974.
- de Vries, Jan, and Ad van der Woude. *The First Modern Economy. Success, Failure, and Perseverance of the Dutch Economy, 1500-1815.* Cambridge: Cambridge University Press, 1997.
- Edwards, P.R. "The Development of Dairy Farming on the North-Shropshireplain in the Seventeenth Century " *Midland History* 4, no. 2 (1977): 175-191.
- Elias, Norbert. *The Civilizing Process. The History of Manners.* Vol. 1. Oxford: Basil Blackwell, 1979.
- Enno van Gelder, H. . "Een Italiaansch Reiziger over Ons Land in 1517." *Oud-Holland* XXXV (1917): 12-33.
- Fleischman, W. *Lehrbuch Der Milchwirtschaft.* 5, revised ed. Berlin: Verlagsbuchhandlung Paul Parey, 1915.
- Groffen, Dimphéna. "De Broeker Kaasmarkt, 1858-1876." *Broeker Bijdragen* 43 (2003): 437-446.
- Guicciardini, Lodovico, and Bernardina Aristodemo. "Descrittione Di Tutti I Paesi Bassi. Edizione Critica." University of Amsterdam, 1994 (1567).
- Jacobsen Jensen, J. N. . *Reizigers Te Amsterdam. Beschrijvende Lijst Van Reizen in Nederland Door Vreemdelingen Voor 1850 .* Amsterdam, 1919.
- Kernkamp, J.H. "Bengt Ferrner's Dagboek Van Zijne Reis Door Nederland in 1759." *Bijdragen en Mededeelingen van het Historisch Genootschap* 31: 314-509.
- Kloek, Els. "De Geschiedenis Van Een Stereotype. De Bazigheid, Ondernemingszin En Zindelijkheid Van Vrouwen in Holland (1500-1800)." *Jaarboek van het Centraal Bureau voor Genealogie* 58 (2004): 5-25.
- Knapp, W.H.C. "Botercontrole in Nederland. De Geshiedenis Van De Nederlandsche Botercontrole in Verband Met De Boterwetgeving En -Handel." Landbouwhogeschool, 1927.
- Luyken, Jan, and A.N. Paasman A.J. Gelderblom, and J.W. Steenbeek (eds.) *Duytse Lier Emblem Project Utrecht, 2006* [cited June 2006 2006]. Available from <http://emblems.let.uu.nl/emblems/html/lu1671004.html>.
- Meijer Drees, Marijke. "Patriottisme in De Nederlandse Literatuur (Ca. 1650-Ca. 1750) " *De nieuwe taalgids* 88 (1995): 247-260.
- Moor, G. de. *Verborgen En Geborgen. Het Cisterciënzerinnenklooster Leeuwenhorst in De Noordwijkse Regio (1261-1574).* Hilversum, 1994.
- Murriss, Roelof. *La Hollande Et Les Hollandais Au Xviiie Et Au Xviiiè Siècles Vus Par Les Français.* Edited by MM. Baldensperger et Hazard, *Bibliothèque De La Revue De Littérature Comparée ... T. Xxiv.* Paris: H. Champion, 1925.
- Niemeyer, J.W. . "Achttiende-Eeuwse Buitenlandse Toeristen En Hun Reisverslagen." *Broeker Bijdragen* 37 (1996).
- Ottema, Nanne. *Het Oude Zuivelbedrijf in Het Friesch Museum.* Friesch Genootschap van Geschied-, Oudheid- en Taalkunde Friesche Maatschappij van Landbouw, 1926.
- Posthumus, N.W. *Nederlandse Prijsgeschiedenis.* 2 vols. Leiden, 1964.
- Schama, Simon. *The Embarrassment of Riches : An Interpretation of Dutch Culture in the Golden Age.* London: Collins 1987, 1987.
- Schoockius, M. *Tractatus De Butyro Accessit Ejusdem Diatriba De Aversatione Casei.* Groningen, 1664.
- Sion, J. *les payans de la normandie orientale* (Paris,1906)
- Slicher van Bath, B.H. "Een Fries Landbouwbedrijf in De Tweede Helft Van De Zestiende Eeuw." *Agronomisch-Historische Bijdragen* 4 (1958): 72-136.

- Smith, Adam, and Edwin Cannan. *An Inquiry into the Nature and Causes of the Wealth of Nations*. London; Methuen & co., 1904.
- Strien, C. D. van, and Dirk de Vries. *Touring the Low Countries : Accounts of British Travellers, 1660-1720*. Amsterdam: Amsterdam University Press, 1998.
- Temple, Sir William. *Observations Upon the United Provinces of the Netherlands*. Translated by Sir George Clark. 2 ed. Oxford: Clarendon Press, 1672 (1972).
- Van der Wee, Herman. *The Growth of the Antwerp Market and the European Economy (14th - 16th Centuries)*. 3 vols. Leuven, 1963.
- Vigarello, Georges. *Le Propre Et Le Sale. L'hygiène Du Corps Depuis Le Moyen Age*. Paris: Seuil, 1985.
- Wander, Boy. "Zindelijk Nederland. Opmerkingen over De Hygiënische Toestanden in Ons Land Gevonden in Reisjournalen Van Vreemdelingen (1517-1810)." *Volkskunde* LXXV, no. 3 (1974): 169-200.
- Whittaker, Dick, and Jack Goody. "Rural Manufacturing in Rouergue from Antiquity to the Present: The Examples of Pottery and Cheese." *Comparative Studies in History and Society* 43, no. 2 (2001): 225-245.
- Winter, J.M. van. "The Consumption of Dairy Products in the Netherlands in the Fifteenth and Sixteenth Centuries " In *Milk and Milk Products from Medieval to Modern Times: Proceedings of the Ninth International Conference on Ethnological Food Research*, edited by Patricia Lysaght, 3-13. Edinburgh: Canongate Academic, 1994.
- Zanden, J. L. van. *The Rise and Decline of Holland's Economy : Merchant Capitalism and the Labour Market*. Manchester, UK ; New York: Manchester University Press : 1993.
- . "A Third Road to Capitalism? Proto-Industrialisation and the Moderate Nature of the Late Medieval Crisis in Flanders and Holland, 1350-1550." In *Peasants into Farmers? The Transformation of Rural Economy and Society in the Low Countries (Middle Ages - 19th Century) in Light of the Brenner Debate*, edited by P. C. M. Hoppenbrouwers and J. L. van Zanden, 85-101. Turnhout, 2001.