ANCIENT TEXTILES SERIES VOL. 6

THE MEDIEVAL BROADCLOTH

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Changing Trends in Fashions, Manufacturing and Consumption

Edited by
Kathrine Vestergård Pedersen
and Marie-Louise B. Nosch

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INTRODUCTION

The study of medieval textiles is by no means a new field, either within the context of historico-archaeological research or in textile research in general. Over the decades archaeological textiles have been investigated and published, and historical medieval sources have been interpreted and analysed. The medieval period – here defined as the period from around 1000 to 1500 – is wonderfully rich regarding the extent of available sources – many well-preserved textiles, textile tools, pictorial sources of working scenes and tools in use, as well as written sources with information on medieval production, organisation, standards and the spread of textiles via trade routes and import bills. The focus of the research into medieval textiles has varied from discussions about their economic importance, the use of cloth, the development of craft traditions, and the influence on consumption and social status. The research area appears unlimited. However, research into medieval textiles has been more or less divided between a historical area and an archaeological area, and a fully interdisciplinary cooperation between the two has rarely been attempted. The present volume is the result of an interdisciplinary seminar on medieval textiles where archaeologists and historians not only shared their expert knowledge, but also studied the actual archaeological textile finds together on an excursion to the Lödöse Museum in Sweden.

The topic of the seminar was *broadcloth*. The word *broadcloth* is used in historical research as an overall term for the woven textiles that were mass-produced and exported all over Europe. Broadcloth was first produced in Flanders, as a decidedly luxurious cloth from the 11th century and throughout the medieval period. Broadcloth is the English term while in Flemish it was called *Laken*; *Tuch* in German, *Drap* in French, *Klæde* in the Scandinavian languages and *Verka* in Finnish. The definition of *broadcloth* derives from written sources, however, it cannot be identified so readily in the archaeological textiles, thus making the topic of medieval broadcloth very suitable as an interdisciplinary area of study. The first chapter of the book is written by John Munro – the well-renowned expert of Flemish broadcloth. He presents a splendid introduction to the subject and takes the reader through the manufacturing and economic importance of medieval broadcloth as a luxury item. With the help of a series of tables he demonstrates the real value of several broadcloth types.

A major factor in the medieval history of broadcloth is the Hansa trade network and its role in European trade. Chapter two in this publication deals with the cloth trade in the Baltic Sea area. Historian Carsten Jahnke demonstrates the excellent value of the Holdebrand Veckinghusens and Hans Selhorst account books as a source. He describes how broadcloth was produced according to certain standards, how it was controlled and labeled and how it was packed and shipped off, as well as who was responsible for these

The participants on excursion to Lödöse Museum in Sweden. From the left: John Munro, Kathrine Vestergård Pedersen, Stella Steengaard, Sandra Comis, Heini Kirjavainen, Jerzy Maik. The photo was taken by Dominique Cardon. Camilla Luise Dahl is absent from the photo.

actions and who received the cloth when it reached its destination. He then considers the sums and the prices and concludes that it was not the highest luxury quality cloth which was imported to the Baltic.

After this thorough introduction to the historical, economic and mercantile context of broadcloth production, the view is turned towards its archaeological remains. Chapters three, four and five investigate archaeological textiles excavated in the Baltic area, as well as in Finland and Poland. The data are presented by archaeologist Jerzy Maik, Heini Kirjavainen and Riina Rammo. Their contributions demonstrate the evidence in archaeological material for both local and imported textiles, and the richness of types and qualities in the archaeological textiles. Certain textile types can be interpreted as broadcloth imported to these regions due to their fibre type and physical properties.

Chapters six and seven deal with the problems that occur when combining the terminology from written sources with the terminology of archaeological textiles. Camilla Luise Dahl gives examples of the terminology of multi-coloured textiles – the variation in the words and their use in different languages as well as changes to the meaning of these words over the course of time. As an example the terms *strijpte laken* and *gheminghet laken* have changed meaning and use in the Scandinavian languages and documents. Kathrine Vestergård Pedersen adds to the terminology by presenting examples of different visual features in archaeological textiles from Lödöse including coloured, striped and marbled patterned textiles. In this material both imported broadcloth types as well as locally

produced imitations of the imported types are presented. The final chapter is a report from an ongoing reconstruction project where Anton Reurink from the open-air museum in Eindhoven, Holland, has recreated medieval broadcloth based on written and iconographic sources. He has reconstructed the tools for the preparation and spinning of wool and has had a group of spinners produce yarn in the appropriate quality according to written sources from the Leiden broadcloth production. Thus far a total of approximately 20 metres of cloth have been woven and the first experiment with fulling by foot has been performed. The project is on-going and will continue with more experiments in fulling, napping and shearing.

The basis for this collaboration was a seminar organised by the Danish National Research Foundation's Centre for Textile Research and the Annual Meeting for Historians at the University of Copenhagen in August 2006. The excursion to Lödöse Museum was a great opportunity for the researchers to exchange knowledge and working methods. The archaeologists could contribute with comparisons to their material and the historians contributed with information on different kind of cloth types known from the written sources and pointed them out in the Lödöse textiles.

We thank the authors for their expert contributions.

Kathrine Vestergård Pedersen and Marie-Louise B. Nosch
June 2009

Chapter 1

Three Centuries of Luxury Textile Consumption in the Low Countries and England, 1330–1570: Trends and Comparisons of Real Values of Woollen Broadcloths (Then and Now)

John Munro

LUXURY TEXTILES: AN OVERVIEW OF LATE-MEDIEVAL CLOTH PRODUCTION, TRADE, AND CONSUMPTION

If mankind's three basic necessities have always been food, clothing, and shelter, whose production, trade, and consumption have rightly been a primary focus of economists and historians for many generations, we may ask this vital question: how do we distinguish between necessities and luxury products? Indeed, any examination of later-medieval and early-modern commodity prices reveals that for all three of these basic categories there was a seamless continuum from the very cheapest to the most expensive goods sold on the market, so that making clear cut divisions becomes virtually impossible. How and why was the consumption of food and drink, for example, transformed from a basic necessity to ensure survival to become a luxury that enhances and enriches the quality of life?[1]

Obviously the very same considerations apply to clothing as well. For many people, if only for a much smaller segment of the population, chiefly to be found in the aristocracy, the higher clergy and wealthy bourgeoisie, clothing has also served and still serves other wants, in terms of luxury consumption: for decoration and for the assertion of personal values, and especially of one's social status. Indeed, for such people, luxury textiles may have been and still are deemed as personal 'necessities'.

For later-medieval and early-modern Europe, one may cite the wide variety of sumptuary legislation, by which royalty and the aristocracy sought to prevent the lower classes – the lower bourgeoisie and working classes – from seeking to emulate their 'betters' in the modes of dress that they were permitted to wear.[2] Not only the very detailed sumptuary legislation, but also a remarkable series of annual textile prices, a wide variety of other commodity prices and urban industrial wages in the late-medieval and early-modern Low Countries and England, together allow us to measure changes in real values of various textiles in these two regions for almost three centuries, from the 14th to the 16th, and to make comparisons with modern-day consumption patterns.[3]

THE RELATIVE SHIFT TO LUXURY TEXTILES IN LATE-MEDIEVAL INTERNATIONAL TRADE

In the late-medieval European economy, for a variety of other reasons, costly luxury textiles gained an even more important role in both manufacturing and international trade than they had enjoyed before the 14th century.[4] As I have contended in other publications, the spreading stain of warfare – international, regional, and local or regional civil wars – beginning in the 1290s and continuing into the Hundred Years' War (1337–1453), brought about drastic alterations in the structure of international trade that directly or indirectly favoured the production of luxury textiles. In essence, both the economic and political consequences of such chronic, widespread warfare, combined with a drastic fall in population after the Black Death, raised the transaction costs of long-distance trade, in terms of transportation, protection, and marketing costs, while also raising the taxation of trade, to often prohibitive levels. Indeed, those rising transportation and transaction costs virtually eliminated the long-distance commerce in the cheaper textiles from north-west Europe to the far distant Mediterranean basin, all the more so since transaction costs are a fundamentally a function of both security and scale-economies, both of which were greatly reduced by the post-Plague demographic decline and chronic warfare.[5] That was all the more true for those who produced cheap textiles that lacked any distinguishing features, and were indeed undistinguishable from almost identical cheaper products produced in the Mediterranean basin itself. Necessarily acting as 'price takers', these northern producers thus were unable to raise prices to compensate for rising transaction costs.

The chief beneficiaries of these structural changes in the late-medieval international trade in textiles were evidently those producing luxury products: not just those producing very costly silks,[6] but even more so, those manufacturing heavy-weight, expensively dyed woollen broadcloths, all made from the very finest wools and dyestuffs. For only such luxury textiles were able to sustain these rising marketing and other transaction costs, especially to and in the Mediterranean basin, which remained by far the most important market zone for the European economy. Furthermore, producers of luxury woollens had always striven to differentiate their products by distinguishing superior quality over those of their competitors. Thus acting as 'price-makers' in the context of 'monopolistic competition', they were better able to raise their prices, for a much smaller, wealthier market. In any event, rising transaction costs were a far smaller proportion of final retail prices for luxury goods. Consequently, the late-medieval Low Countries, northern France, England, and even Italy, experienced a major reorientation in textile production and trade away from the *sayetteries* (*worsted* industries, in England) to an overwhelming concentration on heavy-weight luxury woollens, whose chief markets came to be those in the Baltic and northern Europe.[7]

Since the single most important component of luxury woollens was fine English wool, the Low Countries' draperies had no choice but to accept, from the 1330s, an increasingly extortionate taxation of English wool exports, which further and very substantially raised their costs and prices all the more.[8] Nevertheless, so long as this region's luxury woollen industries continued to prove successful in convincing their customers in the widely diverse European and also Islamic (chiefly Ottoman) markets of the distinctively superior quality

of their cloths, they were then able to set prices that would continue to maintain profits in international trade, even with a smaller sales volume and despite rising raw material and transaction costs.[9]

THE 16TH CENTURY REVIVAL OF LONG DISTANCES TRADE IN CHEAPER TEXTILES: INDUSTRIAL CHANGES

By the early 16th century, however, a combination of macro-economic and micro-economic factors combined to lower transportation and transaction costs in international trade, with significant consequences for the European textile industries. The most important factors in these cost reductions were: a relative diminution in warfare, and thus an increase in relative security; renewed demographic growth, especially with a dramatic and disproportionate growth in urban populations that led to superior scale economies in international trade; and major innovations in marketing, and in both sea-borne and land transportation.[10] Those much more propitious economic circumstances thereby acted to promote a recovery and renewed expansion in the international trade in relatively less expensive, chiefly lighter textiles, whose chief markets were again found mainly in the Mediterranean basin, and, this time, also in the Spanish New World – in warmer climate zones that provided better markets for lighter textiles.[11]

The chief beneficiary of these structural changes in international trade in textiles during the early to mid-16th century were the worsted-type *sayetteries* of the southern Low Countries, led by the Flemish town of Hondschoote, whose light-weight, relatively inexpensive textiles were exported chiefly to this region, especially to Italy and Spain. By the 1530s, they had become the predominant sector of the Low Countries' textile industries.[12] Furthermore, even before the 1530s, this region's luxury woollen cloth industries had largely succumbed, though never entirely, to the overwhelming competition in most European textile markets from the much lower-cost (because woven from tax-free wools), more cheaply-priced, but still luxury-quality English woollen broadcloths. These once renowned and very prominent luxury woollen draperies, as represented here, from both Ghent (Flanders) and Mechelen (Brabant), had managed to survive into the 16th century, though almost as shadows of their former selves, by serving a very narrow market niche of the ultra-rich in European society.[13]

Fortunately, a list of comparative textile prices and 'real' values in the southern Low Countries in the decade from the mid 1530s to the mid 1540s illustrates the very major differences between 'every day' and 'luxury' textile consumption (Table 1.2).[14] In this table, the first category of textiles, as a 'necessity' in terms of meeting fundamental needs for clothing, is represented by two types of the light-weight and relatively cheap worsted-type Hondschoote *says*, which had genuinely international importance. The other two textiles in this table that represent the other, contrasting category of luxury textiles, are the Ghent *dickedinnen* woollen broadcloths and the Mechelen *Rooslaken* woollen broadcloths.[15]

For no other pre-modern era, in the Low Countries, are we able to make such a valuable comparison. Since the Flemish *sayetteries* regained their economic prominence only in the very late 15th, early 16th centuries, as noted earlier, we have only a very few, scattered prices

for *says* in the medieval era.[16] For luxury woollen broadcloths, Ghent and Mechelen are the only towns, in the southern Low Countries, at least, whose annual treasurers' accounts continue to provide individual textile prices after 1500.[17] Nevertheless, the prices of woollens from both Ghent and Mechelen were, in the 1530s, relatively no higher (in 'real terms') than they had been in the 15th century.[18] Furthermore, as Table 1.1 demonstrates, the 1546 drapery ordinance for the Ghent *dickedinnen* indicates that it was exactly the same woollen broadcloth whose production had previously been regulated in 1456; and indeed this 'medieval broadcloth' seems to have been manufactured without any significant changes from at least the mid-14th century. The other 16th-century broadcloth in Table 1.2, the Mechelen *Rooslaken*, also seems to have been unaltered since its first appearance in the mid 15th century.

To be sure, 'homespun' or cottage-produced textiles might better meet the test of representing 'necessities'; and conversely, woollen scarlets and silk fabrics would be better representations for luxury – or ultra-luxury – consumption. But for none of these do we have comparative market prices in this period. In the first place, homespun textiles by their very nature were not traded in most European markets. Second, scarlets had largely disappeared from northern markets by the mid-15th century.[19] Third, while silks had become even more prominent in European luxury textile markets, by the 16th century, we certainly do not have the data to compare prices with product sizes for the very wide variety of silken textiles (satins, damasks, velour, etc), in various and widely differing dimensions.[20] We do, however, have such data for both luxury woollen broadcloths and Hondschoote *says*, as presented in both Tables 1 and 2.

THE PHYSICAL COMPOSITION OF WOOLLENS AND WORSTEDS AND THE TECHNOLOGY OF THEIR PRODUCTION

Before examining these differences in prices and relative values, however, we must first examine the physical differences between the wool-based textiles grouped into three categories: says or worsteds, woollens, and a hybrid category, commonly called serges.[21] Says or worsteds, a very ancient textile fabric, historically preceding genuine woollens, were generally the much lower quality, lighter, and least expensive of the three types. They were woven from relatively cheap, coarse, strong, long-stapled 'dry' yarns (20.0–30.5 centimetres), that is, worsted yarns in both warps and wefts; and they were generally woven on a narrow, one-man horizontal treadle-loom, often with a diamond or lozenge-twilled weave.

Woollens, on the other hand, were generally much finer quality, much heavier, and more expensive of these three types. The principal reason for their greater weight, better quality, and higher cost (when undyed) was their wool-composition: very fine, curly, short-stapled (5.0–6.0 centimetres) 'greased' or 'wet' yarns, in both warp and weft. In medieval Europe, by far the finest and thus the most costly wools of this type were English: specifically, in order of quality and value, those from the Welsh Marches or western counties of Herefordshire and Shropshire; second, from the adjacent Cotswolds counties of Worcestershire, Gloucestershire, Oxfordshire, and Berkshire; and a more distant third, those from the Kesteven and Lindsey districts of the north-eastern county of Lincolnshire.[22]

THE TECHNIQUES AND PHYSICAL NATURES OF WOOL-BASED TEXTILE PRODUCTION

The necessary techniques to prepare these fine wools for weaving also explain the much heavier weights of these woollen textiles: *i.e.*, combing (for the warp yarns), carding (for the weft yarns), spinning (drop-spindle for warps and spinning wheels for the wefts), warp-winding on the loom, and weft-insertions in the weaving bobbins; weaving itself (wefts inserted with shuttles through heddle-separated warps); and finally fulling the woven cloth. First, these short, curly, scale-fibred wools had to be greased – with butter, olive oil, or herring fat (though generally forbidden) – in order to protect them from entanglement and thus damages in these ensuing processes. That was all the more necessary since the natural oils or lanolin in the wool fibres had been removed in the scouring and cleansing processes of wool preparation.

Worsted wools, on the other hand, did not require any such greasing. First, they were not scoured, and thus retained their own natural lanolin; and, second they were strong and sufficiently straight-stapled that they did not need such protection in the combing, spinning, and weaving processes. For this basic reason, in the medieval and early-modern Low Countries and France, the woollen industries were known as the 'greased' (or wet) draperies: *draperies ointes*; or in Flemish (Nederlands), the *gesmoutte draperie* (*lakenindustrie*). Conversely, the worsted industries were known as the 'dry' draperies: *draperies sèches*; and, in Flemish, *droge draperie.*

FULLING AND FINISHING WOOLLENS

The removal of that grease, and also of the starchy warp-sizing, and dirt adhering to both, explains the first and very necessary reason for the fulling processes that ensued when the woven cloth was removed from the loom. For woollens, it was a two-man treadle-operated broadloom, producing cloths that were up to 4.0 metres in width, and up to 33 metres in length (Table 1.1). These cloths were then placed in a fuller's vat, or large earthenware tub, containing an emulsion of warm water, a chemical known as *fuller's earth*, and also urine, even though it was widely prohibited. The ammonia in the urine not only enhanced the scouring and bleaching properties of fuller's earth but also combined with the grease to form a cleansing soap.[23] The fullers, usually a pair of husky journeymen, supervised by a master, then vigorously trod upon the soaking cloth, for periods ranging from three to five days, according to the quality of the cloth and the season (since the working day in summer was twelve to fourteen hours, but only eight hours in the winter months).[24]

The equally or even more important reason for fulling was two-fold. First, the short, curly, scaly, and weak wool fibres had to be forced to interlace and interlock and thus to felt, in order to give the cloth cohesion and strength. Otherwise, an unfulled cloth taken from the loom would suffer tearing, possibly to the extent of falling apart. The second and related objective was to shrink and compress the cloth, by as much as one half (54 to 56 percent).[25] Both objectives were achieved by the combination of pressure and heat: from foot-pounding and soapy hot water. That compression therefore also fundamentally explains

why fulled woollen broadcloths were so much heavier than were worsteds (and also hybrid fabrics). Once fulled in this fashion, woollen broadcloths were virtually indestructible and could be worn by and through several generations, through inheritance or second-hand sales. At the same time, the fulling process obliterated almost all traces of the designs created by twilled weaving. That was completed by the ensuing processes of cloth-tentering (to remove all wrinkles and defects), teaselling or 'napping' (using thistle-like teasels to raise the naps, or loose ends of fibres), and shearing – by a repeated alternating process of napping and shearing – so that the final product was as soft and fine to the touch as silk.

Fulling was the one and only major process of woollen cloth manufacturing that underwent powered mechanization before the modern Industrial Revolution (and really only in the 19th century).[26] Water-powered fulling mills had been introduced into Italian cloth manufacturing by the 10th century, and had become widely diffused in English cloth industries during the 13th and 14th centuries. That process, using cams and trip-hammers to convert the rotary power of the water wheel into reciprocal power, effected the fulling processes by pounding the cloth with a pair of heavy blocks of oak (about 24 kg in weight), used in alternation, up to 40 times per minute. With just one attendant, these fulling-mills could scour, felt, and full a standard-sized good quality woollen cloth in about twenty hours, though requiring only about nine hours for lesser quality cloths.

The economic significance of this industrial innovation can be seen in comparative production costs: traditional foot-fulling accounted for about 20 percent of the value-added pre-finishing costs (in the medieval Low Countries); but mechanical fulling (as documented in Florence), combined with tentering, accounted for only about 5 percent of such costs.[27] Thus, with a potential of a 75 percent savings in the fulling processes, we can readily understand why the English cloth industry had became almost completely converted to this form of mechanized fulling, by the later 14th, early 15th century.

In the southern Low Countries, some draperies had also used fulling-mills during the 13th and early 14th centuries, but they were not used again in this region until the 16th century. The reason can be found in the previously discussed reorientation of textile manufacturing in the Low Countries to luxury woollen cloth production, certainly from the 1330s. Thus, when the economics of this later-medieval industry dictated a form of price-making monopolistic competition, in which competition was essentially based on the Flemish draperies' success in convincing foreign consumers of the superior quality of their luxury woollens, these draperies feared that mechanical fulling would injure or degrade the finer woollen yarns, and thus ruin their reputation for superior quality. At the same, time because the labour component of production costs was so small in the luxury woollen draperies, a potential gain of 75 percent from mechanized fulling would have represented, in 1435, a savings of only 3.23 percent of the sales price of a pair of Leiden's *voirwollen halvelakenen,* at £4 9s 0d *groot* Flemish; and a savings of only 2.73 percent of that year's price of a Ghent *dickedinnen,* at £7 0s 0d *groot.* Since the finer woollens of the Flemish *drie steden* and other drapery towns in the Low Countries were already three times more expensive than rival English broadcloths (see Table 1.12a), such a very minimal price reduction from mechanisation would have gained them fewer customers than those lost from concerns about the true luxury quality of their woollens.[28]

DYING AND FINISHING WORSTEDS AND WOOLLENS

In contrast, worsteds underwent no such fulling, napping, or shearing processes, but only bleaching and dyeing. The dyeing of both woollens and worsteds took place in the wools or yarns themselves, especially if woad (not requiring a mordant) had been used to produce a basic blue colour, and then in the piece, often using more woad and then madder (with a mordant, such as alum) to produce a wide variety of colours: deep blues, purples, blacks, browns, greens, *etc.* Those dyed red, or in red-related colours were normally dyed only in the piece. Needless to say, the finer and more expensive woollens were dyed with more costly dyes: especially the scarlets, dyed with kermes (with or without other dyes), which will be discussed later in this study on luxury cloth consumption. Thus, worsteds or worsted-type fabrics were generally so much cheaper than the true, heavy-weight fulled woollens for two reasons: first and foremost, because they contained far cheaper raw materials; and secondly, because their production processes were so much simpler, requiring considerably fewer stages of manufacturing, with considerably less labour.

COMPARATIVE PRODUCTION COSTS OF WOOLLENS AND WORSTEDS: WOOLS AND LABOUR

Nevertheless, in relative terms, labour did account for a relatively higher proportion of total manufacturing costs in the worsteds industries. As just indicated, in the analysis of fulling costs, labour accounted for a correspondingly smaller share in the production of luxury woollens, especially those woven entirely from the very best English wools, whose high costs were further augmented, as also noted earlier, by English export taxes, which reached a peak burden in the early 15th century.[29] Thus for example, in producing a fine woollen black broadcloth at Leuven in 1434, its English wools accounted for 76.2 percent of the pre-finishing manufacturing costs and for 62.5 percent of the total cost, while dyeing and dressing the cloth accounted for 18.0 percent of total costs – most of that in the woad and madder dyes themselves – so that the remaining share of manufacturing costs in labour amounted to only 19.5 percent of total costs.[30] Thus, labour's relatively higher share of total production costs in worsted manufacturing simply reflects the relatively lower costs in wools, dyestuffs, and other materials.

HYBRID WOOLLEN-WORSTED TEXTILES: FLEMISH SAYS AND SERGES, AND 'STUFFS' OF THE ENGLISH 'NEW DRAPERIES'

The third type of wool-based textile manufacturing was simply a hybrid of the other two main branches. Its textiles, sometimes called says, serges or 'stuffs', were woven from a long-stapled 'dry' worsted warp and a short-stapled 'greased' woollen weft, though generally of much lower quality wools than those used in the true woollen broadcloth industry. In terms of relative weights and values, they corresponded more to worsted than to woollen manufacturing. For that reason, the hybrid or mixed-fabric *sayetteries* and similar serge-type cloth manufacturing industries were classed as part of the 'light

draperies' or *draperies légères* (in Flemish: *lichte draperie*), in the medieval and early-modern Low Countries.

As noted earlier, in 13th-century Flanders, and then again from the later 15th and through the 16th centuries, the most prominent manufacturer of this type of cloth was the Hondschoote *sayetterie*.[31] When rebels in the Low Countries inaugurated their combined religious and nationalist revolt against Spanish rule in 1568 – commencing the Netherlands' 'Eighty Years War', which ended only with the Peace of Westphalia in 1648 – Spanish armies devastated and soon reconquered Flanders, thereby forcing thousands of Flemish textile artisans into exile: to both Holland and England.

For England itself, a very major economic consequence of that forced emigration and exile was the revival of its ancient worsted industry, which then became the so-called 'New Draperies'. These predominantly Flemish exiles chose the heartland of that ancient industry: East Anglia (Norfolk, Suffolk, and parts of Essex). Most of the 'New Draperies' products were hybrid worsted-woollen 'stuffs' or serges, much like those produced in Hondschoote, probably the key progenitor of the English New Draperies.[32] From the 1660s, the output and export of this new English industry's products were exceeding, in both volume and value, the true woollens of what were now called the Old Draperies; and by a very considerable margin by 1700.[33] By that year, overseas sales of worsted and semi-worsted 'stuffs' from the New Draperies had now increased, in absolute and relative terms, to account for 58.8 percent of the total textile exports by value; high-quality broadcloths, accounted for only 25.4 percent; and the cheaper, coarser kerseys, dozens, and other 'narrow' woollens, for the remaining 15.8 percent of these exports.[34] Nevertheless England's traditional heavy-weight broadcloth industry continued to be important throughout the 17th and 18th centuries,[35] and entered its final phase of decline only from the mid 19th century. Kenneth Ponting, historian of the West Country broadcloth industry, offered this explanation for its decline:

> It should have been clear to all that the days of the old broadcloth, whether made from British [English] or Spanish wool, were numbered. Men were no longer going to wear the heavy, long, broadcloth coats decorated with embroidery that were so fashionable in the 18th century. A lighter-weight cloth was needed ... [36]

Textile products other than traditional broadcloths – those just listed – nevertheless continued to support a steadily declining woollen industry into the 20th century.[37] But virtually all wool-based clothing worn today is worsted or semi-worsted in nature; and even so, according to David Jenkins, one of the leading historians on modern-day textiles, 'the role of wool in world textiles has declined to what is now a very tiny proportion' (just 4.9 percent in 1990).[38]

TABLE 1.1: THE DATA ON THE PHYSICAL COMPOSITION AND WEIGHTS OF WOOLLENS, WORSTEDS, AND SERGES (SAYS)

Let it thus be said with complete clarity, in historical perspective: the heyday of the traditional, heavy-weight woollen broadcloth was the 14th, 15th, and 16th centuries. The nature of the physical differences, and thus differences in production costs and market

prices, for the three types of wool-based textiles, in 16th century England and the Low Countries, can now be better understood from the data given in Table 1.1. The sizes of the three luxury-quality woollens – from the draperies of Ghent (Flanders), Mechelen (Brabant), and Essex (England) – are roughly comparable in terms of the area, in m^2, of the finished cloths: 34.913 m^2, for the Ghent five-sealed *dickedinnen* broadcloths; 35.604 m^2, for the five-sealed *Gulden Aeren* (gold eagle) broadcloth woollens from Mechelen; and 37.095 m^2, for English 'short' broadcloths from Essex. Note that all three of these woollen broadcloths were woven uniquely from very fine, short-stapled English wools.

Somewhat smaller in size, primarily because of its narrower width, was the *Oultreffin* woollen manufactured by the relatively young so-called Flemish 'nouvelle draperie' of Armentières, with an area of 29.400 m^2. Its distinguishing feature was its wool composition: two-thirds of which were Spanish *merino* wools and one-third English wools (Cotswolds, Lincolnshire Lindseys, and Berkshires). By the mid 16th century, it must be noted, Spanish *merino* wools were rivalling the better English wools in quality, though they would not surpass them until the 17th century.[39] The heavy weight of the Armentières *oultreffin* indicates, however, that clearly this was a genuine fulled broadcloth: indeed it was the heaviest of all recorded in this table, with a weight of 820.503 g per m^2 of finished cloth. The next heaviest are the Essex broadcloths, with 782.58 g per m^2; the Mechelen broadcloths are fairly close, at 746.42 g per m^2 (*i.e.*, 97.7 percent of the latter), while the Ghent *dickedinnen*, for centuries that drapery's most renowned woollen, was only 677.66 g per m^2 (Bruges pound weight), or 633.77 g (if the Ghent pound is used).

The lightest textile from the Low Countries was the narrow say from Bergues-St. Winoc, a pure worsted, in both warp and weft, which weighed only 260.352 g per m^2, just 33.27 percent of the weight of an Essex broadcloth, and 34.06 percent of the weight of Mechelen's *Gulden Aeren* broadcloth. But note, however, that the Hondschoote small double-say had a very similar weight: 266.334 g per m^2. But even lighter was the Essex 'New Draperies' say (according to 1579 regulations): its weight of 141.193 g per m^2 was only 18.04 percent of the comparable weight of an Essex broadcloth; just over half (54.23 percent) of the weight of the aforementioned Bergues-St. Winoc say, and less than half the weight (42.49 percent of 332.307 g per m^2) of the weight of an Essex single bay, another recent product of the English 'New Draperies'. The weight of that Essex single bay, on the other hand, was very close to that of the Hondschoote single say, which was (somewhat surprisingly) 340.052 g per m^2 (with a weight of 5.103 kg for the full-sized cloth of 15.006 m^2). It was heavier, per m^2 of its area, than the small double Hondschoote say evidently because more wool was compressed into its much narrower width (0.613 metres compared to 1.138 metres for the double say). All three of these fabrics were hybrids: with 'dry', long-stapled worsted warps and 'greased' short-stapled woollen wefts.

THE PRESENTATION OF TEXTILE PRICES: PROBLEMS AND SOLUTIONS OFFERED

The remaining 16 tables in this study present textile prices over three centuries, most for the Low Countries but some also for England (Table 1.12) and for Poland (Table 1.17).

Table 1.1: The dimensions and compositions of selected woollens and says in the 16th century: England and the southern Low Countries

1	2	3	4	5	6
Drapery: City/Region	**GHENT**	**MECHELEN**	**ESSEX**	**ARMENTIERES**	**BERGUES-ST.WINOC**
Date of Ordinance	**1456, 1546**	**1544**	**1552**	**1510, 1546**	**1537**
Name of Textile	Dickedinnen	Gulden Aeren	Short Broadcloth	Oultreffin	Narrow Say
Additional Names	Five Seals	Five Seals	Suffolk, Essex		Fine
Origin of Wools	England	England: Herefords	England	Spanish Merino (2/3)	Flanders, Artois
Wool Types	March, Cotswolds	Lemster Ore	short-stapled	English Cotswolds (1/3)	long-stapled
Length on Loom (ells/yds)	42.500	48.000	n.s.	42.000	n.s.
Length on Loom (metres)	29.750	33.072	n.s.	29.400	n.s.
Width on Loom (ells)	3.625	4.000	n.s.	3.000	n.s.
Width on Loom (metres)	2.538	2.756	n.s.	2.100	n.s.
Weight on Loom (lb)	88.000	n.s.	n.s.	88.000	n.s.
Weight on Loom (kg)	38.179	n.s.	n.s.	40.823	n.s.
Final Length (ells/yds)	30.000	30.000	24.000	30.000	40.000
Final Length (metres)	21.000	20.670	22.555	21.000	28.000
Final Width (ells/yds)	2.375	2.500	1.750	2.000	1.000
Final Width (metres)	1.663	1.723	1.645	1.400	0.700
No of Warps	2066.000	3120.000	n.s.	1800.000	1400.000
Warps per cm (fulled)	12.427	18.113	n.s.	12.857	20.000
Area (m^2)	34.913	35.604	37.095	29.400	19.600
Final Weight (lb)	51.000	58.000	64.000	52.000	11.000
Final Weight (kg)	22.126	27.217	29.030	24.123	5.103
Weight per m^2 (g)	633.766	764.421	782.575	820.503	260.352

1	7	8	9	10
Drapery: City/Region	**HONDSCHOOTE**	**HONDSCHOOTE**	**ESSEX (Colchester)**	**ESSEX (Colchester)**
Date of Ordinance	**1571**	**1571**	**1579**	**1579**
Name of Textile	Single Say	Double Say	Says	Bays
Additional Names	Small	Small	broad	Single
Origin of Wools	Flanders, Friesland	Flanders, Friesland	English	English
Wool Types	Scotland, Pomerania	Scotland, Pomerania	long-stapled	worsted warp, woollen weft
Length on Loom (ells/yds)	40.000	40.000	n.s.	n.s.
Length on Loom (metres)	28.000	28.000	n.s.	n.s.
Width on Loom (ells)	n.s.	1.438	n.s.	n.s.
Width on Loom (metres)	n.s.	1.006	n.s.	n.s.
Weight on Loom (lb)	n.s.	n.s.	n.s.	n.s.
Weight on Loom (kg)	n.s.	n.s.	n.s.	n.s.
Final Length (ells/yds)	35.000	35.000	10.000	35.000
Final Length (metres)	24.500	24.500	9.398	31.953
Final Width (ells/yds)	0.875	1.625	1.000	1.000
Final Width (metres)	0.613	1.138	0.940	0.940
No of Warps	n.s.	1800.000	n.s.	n.s.
Warps per cm (fulled)	n.s.	15.824	n.s.	n.s.
Area (m^2)	15.006	27.869	8.833	30.029
Final Weight (lb)	11.000	16.000	2.750	22.000
Final Weight (kg)	5.103	7.422	1.247	9.979
Weight per m^2 (g)	340.052	266.334	141.193	332.307

a. Flemish ell in metres 0.700
b. Ghent pound in g 433.850
c. Bruges pound in g 463.900
d. Mechelen ell in metres 0.689
e. Mechelen pound in g 469.250
f. English pound avoirdupois 453.593
g. English cloth yard (37 in) 0.940

Note: The areas, in m^2, and the weights per m^2 are calculated on a computer up to seven decimal places; because of rounding areas, calculations using just the three decimal places in this table may give different, and faulty, results.

Sources:
Espinas and Pirenne 1906–1924; Delepierre and Willems 1842; Boone 1988, 40, doc. no. 3:v; Lameere and Simont 1910; Stadsarchief Leuven, no. 1526, fo. 203r–10v; Great Britain, Vol. IV:i, 136–7; De Schryver 1968, 15–8; Coornaert 1930a; 1930b; Edler 1936, 255–256; De Poerck 1951; Chorley 1987: Usher 1920, 200; Pilgrim 1959–1960.

For some textiles, these prices range from as early as the 1330s and to as late as the 1570s. The previously mentioned Revolt of the Netherlands and the Eighty Years War (1568–1648) necessarily determined the termination of this study. For all tables, including even Table 1.12 for England, the prices are expressed in terms of the Flemish money-of-account: the *pond groot* of Flanders, consisting of 20 shillings, with 12d (pence) to the shilling, and thus 240d to the pound.

But, as impressive as such of series of consecutive annual prices – a rarity in economic history – may be, commodity prices in themselves are utterly useless to the economic historian, unless they can be compared to those for other commodities as well as to industrial wages. The central problem afflicting the use of such price data is coinage debasement, its opposite, coinage *renforcement*, and related monetary changes that brought about cycles of inflation and deflation. Coinage debasement is simply the diminution in the quantity of precious metal – here, silver – represented in the actual silver penny and thus in the penny, shilling, and pound, as moneys-of-account. That was achieved by some combination of reducing the weight of the coin, or its fineness (by adding proportionally more copper alloy), or by both techniques. The consequence was to increase the quantity of silver pennies struck from the mint weight of pure silver. From that act flowed two consequences: very large increases in the prince's mint profits (*seigniorage* revenues), but also inflation (rising prices), so that debasement, so common from the late 13th to late 16th centuries, may be seen as a tax imposed on the entire population. *Renforcement* is simply the reverse process: of restoring the quantity of pure silver in the penny, with the common if not inevitable opposite consequence of deflation (falling prices).[40]

Of the two methods of coinage manipulation, debasement, usually undertaken for fiscal motives, was clearly predominant over all these centuries. Thus, in the two centuries from 1350 to 1550, the quantity of fine silver in the Flemish penny or *groot* (*denier gros*, in French) was reduced, by diminutions in both fineness and weight, from 2.067 g to 0.474 g – an overall reduction of 77.1 percent; and by 1580, that quantity had fallen to just 0.300 g.[41] Even in England, which had more firmly resisted the temptations to engage in debasement than did its continental neighbours, the silver penny lost 44.77 percent of its fine silver contents during the later Middle Ages: from 1.157 g in 1346 to 0.639 g in 1526. Subsequently, during Henry VIII's 'Great Debasement', from 1542 to 1551, the penny (and pound sterling) lost a further 83.1 percent of fine silver contents (only partially restored by Elizabeth I's coinage reform of 1560).[42]

In the meantime, from about 1515 to about the 1640s, another powerful force further reduced the 'real' or exchange value of the silver coinage: the onset of the inflationary European Price Revolution. Its monetary roots lay, first, in the South-German silver-copper mining boom, from the 1460s to the 1540s, and then, from the 1550s, in the growing influx of silver from the newly developed Spanish American mines (in Potosi and Zacatecas), whose influxes began to diminish from the early 17th century.[43]

Most economic historians have sought to obviate this problem of inflationary and deflationary price fluctuations by presenting prices in terms of the pure silver contents of the relevant money-of-account prices for the time and place concerned: the so-called 'silver equivalents'. This has not been undertaken in this study simply because the methodology

involved is so flawed that the results are generally spurious in representing any true or 'real values'.[44]

In the first place, the underlying assumption of this 'silver equivalents' model is that price changes are directly related and directly proportional to the extent of a coinage debasement. That in turn is wrongly assumed to have produced a proportional change in money supplies, which in turn supposedly produced a directly proportional change in consumer prices.[45] At best, this is a crude and entirely misleading representation of the Quantity Theory of Money; and in terms of the historical evidence, it is simply, unequivocally false. My own regression analyses of changes in the silver contents of Flemish coinages and in commodity price indexes during the 15th century never demonstrate any such direct relationships. Indeed, according to my regression analyses, price increases were generally much less than would have been expected from a coinage debasement, whether by diminishing the fineness or the weight of the coins (or both together), and thus by increasing the supply of coins in circulation. Second, this technique also fallaciously assumes that the real value of silver is constant over the centuries, while in fact its purchasing power in terms of both gold and goods fell: from a bimetallic ratio of 9.5:1 in the 1360s to one of 14.49:1 in the 1660s.[46]

Alternative methods of obviating the problem of nominal prices in eras of often dramatic price fluctuations and thus of presenting 'real values' are presented in the following section, on Table 1.2.

TABLE 1.2: COMPARATIVE PRICES AND VALUES OF WOOLLENS AND SAYS IN ANTWERP IN THE 1530s

With this information on the physical compositions, sizes, and weights of these textiles, and on the problems of using nominal money-of-account prices and values, we may now better understand the data on textile prices presented in Table 1.2, for the decade 1535 – 1544. These years were chosen because, as indicated earlier, they are the only ones for which I have found prices for the three textiles whose real values are analysed here: the aforesaid Hondschoote says, the Ghent *dickedinnen* and the Mechelen *rooslaken* woollen broadcloths (but none, unfortunately, for the Armentières *Oultreffin* broadcloths). Indeed, for the Hondschoote says, the available prices run, for consecutive years, from only 1538 to 1544. The textile prices – and indeed all prices and wages in this study for the Low Countries – are given in the Flemish *groot* money-of-account.[47]

Prices and wages by themselves are useful for the economic historian only when the historical problems of using nominal prices can be obviated, for the reasons just discussed, but also when they can be directly related to the values of other commodities. Three such methods are offered here, in order to estimate 'real' values of all the textiles considered in this study: (1) by calculating the number of days' wages that a master mason would have been required to spend to acquire one or a specified unit of the textiles being considered; (2) by using comparative price indexes: *i.e.*, comparing a Consumer Price Index based on a 'basket of consumables' for such masons or other industrial workers with a similar price index for the textile concerned, all with a common base period; and (3) by estimating the

Table 1.2: Prices of Hondschoote Says, Ghent Dickedinnen and Mechelen Rooslaken woollens, compared with the purchasing power an Antwerp master mason's daily wages, and with the value of a basket of consumables: in pounds and pence groot Flemish, 1535–1544

1	2	3	4	5	6
Year	**Hondschoote Single Says: Prices in £ groot Flemish (240d = £1)**	**Hondschoote Double Says: Prices in £ groot Flemish (240d = £1)**	**Ghent Dickedinnen Woollens: Prices in £ groot Flemish (240d = £1)**	**Mechelen Mean Values of Rooslaken in £ groot Flemish (240d = £1)**	**Daily Wage of an Antwerp Master Mason in d. groot Flemish***
1535			14.150	11.025	9.750
1536			14.250	11.025	10.250
1537			14.500	10.942	10.250
1538	0.967	2.278	14.500	11.400	11.000
1539	0.945	2.184	15.000	11.400	12.000
1540	0.835	1.961	11.500	11.705	12.000
1541	0.879	2.015	12.000	11.705	12.000
1542	0.838	2.005	14.600	11.200	12.000
1543	0.783	1.775	14.000	11.316	13.000
1544	0.908	1.942	14.000	10.009	13.500
Mean of	0.879	2.023	13.657	11.248	12.214
1538–44	arithmetic	arithmetic	arithmetic	arithmetic	arithmetic

1	7	8	9	10	11	12	13	14
Year	**No. Days' Wages of a Master Mason to buy one Single Say**	**No. Days' Wages of a Master Mason to buy one Double Say**	**No. Days' Wages of a Master Mason to buy one Ghent Dickedinnen**	**No. Days' Wages of a Master Mason to buy one Mechelen Rooslaken**	**No. Days' Wages of a Master Mason to buy 12 m^2 Hondschoote Single Say**	**No. Days' Wages of a Master Mason to buy 12 m^2 Hondschoote Double Say**	**No. Days' Wages of a Master Mason to buy 12 m^2 Ghent Dickedinnen**	**No. Days' Wages of a Master Mason to buy 12 m^2 Mechelen Rooslaken**
1535			348.308	271.396			119.719	91.471
1536			333.659	258.157			114.684	87.009
1537			339.512	256.199			116.696	86.349
1538	21.098	49.702	316.364	248.727	16.872	21.401	108.739	83.831
1539	18.900	43.680	300.000	228.000	15.114	18.808	103.115	76.845
1540	16.700	39.220	230.000	234.109	13.355	16.888	79.055	78.904
1541	17.580	40.300	240.000	234.109	14.058	17.353	82.492	78.904
1542	16.760	40.100	292.000	224.000	13.403	17.266	100.365	75.497
1543	14.455	32.769	258.462	208.917	11.560	14.110	88.837	70.414
1544	16.142	34.524	248.889	177.943	12.909	14.866	85.547	59.974
Mean of	17.163	39.382	265.954	219.987	13.725	16.958	91.413	74.144
1538–44	harmonic	harmonic	harmonic	harmonic	harmonic	harmonic	harmonic	harmonic

Sources:
Ghent: Stadsarchief Gent, Stadsrekeningen 1534/5–1544/5, Reeks 400, nos. 46–52.
Mechelen: Stadsarchief Mechelen, Stadsrekeningen 1534/5–1544/5, nos. 209–19;.
Antwerp: Van der Wee 1963, 457–468, Appendix 39.
Hondschoote: De Sagher, et al. 1954, 362–369, no. 290; 378–381, no. 291; 415, no. 299; Coornaert 1930a, Appendix IV, 485–490; Edler 1936.

Table 1.2 continued.

1	15	16	17	18	19
Year	**Value of the Brabant Basket of Consumables in d. groot Flemish**	**Value of Single Say in Baskets of Consumables**	**Value of Double Say in Baskets of Consumables**	**Value of Ghent Dickedinnen in Baskets of Consumables**	**Value of Mechelen Rooslaken in Baskets of Consumables**
1535	268.733			12.637	9.847
1536	297.467			11.497	8.895
1537	254.333			13.683	10.325
1538	295.533	0.785	1.850	11.775	9.258
1539	300.400	0.755	1.745	11.984	9.108
1540	291.133	0.688	1.617	9.480	9.650
1541	278.000	0.759	1.740	10.360	10.105
1542	293.600	0.685	1.639	11.935	9.155
1543	324.200	0.580	1.314	10.364	8.377
1544	351.067	0.621	1.328	9.571	6.843
Mean of	304.848	0.689	1.580	10.685	8.804
1538–44	arithmetic	harmonic	harmonic	harmonic	harmonic

number of such 'baskets of consumables' whose aggregate value equalled the market value of the textile being considered.

TEXTILE VALUES IN RELATION TO THE PURCHASING POWER OF A BUILDING CRAFTSMEN'S DAILY MONEY WAGE

The first question posed is to ask how much a master building craftsmen would have had to spend to acquire one or a specified unit of these textiles. There are three reasons for choosing the wages of a master mason. First, masons, carpenters, and other building craftsmen were members of about the only occupation for which we possess a continuous series of time-rate (daily) wages for both the Low Countries and England, from the later medieval to modern eras. For, during this era, most wage-earners earned piece-work wages (*i.e.*, payment for the quantity of work produced); and thus the purchasing power of such wages is almost impossible to calculate. Second, wages for masons and carpenters, especially the former, are by far the most prevalent and consistently continuous throughout this entire era; and, it must be noted, only those wages not combined with payments in food, drink, or other kind, were used. Third, masonry (brick and stone) was an occupation that was basically unchanged in its technology and productivity up to the late 19th century, thus permitting us to make reasonable comparisons of nominal and real wages over these centuries.

Columns 7 – 10 in Table 1.2 indicate the number of days' wages that a master mason in Antwerp would have had to spend in purchasing one each of the following textiles: a Hondschoote single say, a Hondschoote double say, a Ghent *dickedinnen* broadcloth, and a Mechelen *rooslaken* broadcloth. Thus, in summary, on average in the years 1538 to

1544, an Antwerp master mason would have correspondingly spent 17.163 days' wages to purchase a Hondschoote single say (15.01 m^2); 39.382 days' wages (over twice as many) for a Hondschoote double say (27.869 m^2); but 265.954 days' wages to purchase a Ghent *dickedinnen* broadcloth (34.913 m^2); and somewhat less, 219.987 days' wages to purchase a Mechelen *rooslaken* broadcloth (35.604 m^2).

Since, however, the dimensions of these four textiles varied from each other, and thus varied in the amount of men's clothing that were produced from them, we instead ask how many days' wages would a master mason have spent to acquire 12 m^2 of each, about the amount requisite to produce one suit of men's clothing (about three per broadcloth).[48] Those estimates, for each of these three textiles, are produced in columns 11–14. For this period, the average number of days' wages required to purchase that same quantity of cloth (12 m^2) would have been: 13.725 days for a Hondschoote single say; 16.958 days for a Hondschoote double say; and 5.4 times as many days, 91.413 for a Ghent *dickedinnen* and 74.144 days for a Mechelen *rooslaken*.

Certainly this comparison provides a very vivid contrast between the consumption of 'every day' textiles and luxury woollens. Consider again, from Table 1.2, that the number of days' wages that a master mason would have had to spend in acquiring a single Ghent *dickedinnen* varied from a high of 348.31days' wages to a low of 240.00, in the ten-year period from 1535 to 1544; and the mean for the years 1538 to 1554 was (again) 265.954 days' wages. Consider, furthermore, that the average number of days employment for master mason in the Antwerp region was about 210 days – so that this range ran from 1.66 years to 1.14 years of employment.[49] In terms of perhaps the more useful comparative measure, the number of days' wages need to purchase 12 m^2 of woollen cloth, that number varied from a high of 119.718 days to a low of 79.055 days, with the aforesaid mean of 91.413 days (for 1538–44).

We may reasonably expect that the principal market for these exceptionably costly luxury *dickedinnen* were the aristocracy and very wealthy bourgeoisie – not master building craftsman (let alone their journeymen). The number of days' wages to purchase the Hondschoote says, whether single or double – a mean of 17.163 days for the single and a mean of 39.382 days for the double – is seemingly much more in line with more modern expenditure patterns on clothing, for the lower middle classes. Thus this table certainly provides a very effective contrast between the purchases of necessities and of luxuries, at least for this era.[50]

PRICE INDEXES AND THE 'BASKET OF CONSUMABLES' (ENGLAND, BRABANT, FLANDERS) IN MEASURING TEXTILE VALUES

We now turn to a different measure of comparison of textile values, with perhaps limited use for this period (1538–44), but of very great value in comparing the 'real' value of such textiles over the three centuries of this study: a Consumer Price Index based on the money value of a weighted 'basket of consumables'. Column 15 in Table 1.2 provides the aggregate value of the various commodities, in Flemish pence *groot*, contained in the Brabant 'basket

of consumables', which Herman Van der Wee constructed on the model of the famous Phelps Brown and Hopkins 'basket of consumables'.[51]

The Phelps Brown and Hopkins index for southern England has been widely used by economic historians in presenting English price trends, in terms of price-index numbers from the 13th to 20th centuries (specifically: 1264–1954). It is the only readily available and only reasonably-weighted price index available, so that it would have been foolish to seek any other model.[52] Both the Phelps Brown and Hopkins and the Van der Wee indexes, along with my own Flemish commodity price-index, use a common base: 1451–75= 100.[53] Since my Flemish price index ends in 1500, the Van der Wee Brabant price index has been used for Flemish textile values after that year, on the grounds that by then the two economies, having undergone monetary unification in 1433–35, were sufficiently well integrated, within a relatively small geographic era, to permit its use for this purpose.[54]

These 'baskets' do not, however, represent any fixed requirement for annual consumption in either southern England, Flanders, or southern Brabant; instead, according to Phelps Brown and Hopkins, their model basket represents 'what a hundred pence [sterling] would buy in 1451–75'.[55] In other publications I have analysed in much greater depth the validity of these two 'consumer baskets' in terms of the known household expenditures in the 15th and 16th centuries, and the statistical methods employed in their construction. Both considerations have convinced me that the Van der Wee basket (even with fewer commodities) provides a better reflection of changing consumer expenditure patterns in these two centuries, than does the Phelps Brown and Hopkins index, particularly in registering changes in those consumer patterns in response to changes in the relative prices of these commodities, though neither of the baskets can take true account of consumer substitutions with such changes in relative prices.[56] I have, therefore, modelled my own Flemish 'basket of consumables' price index on the Van der Wee rather than on the Phelps Brown and Hopkins index for England. Whatever the historical defects of these statistical 'consumer baskets' clearly they provide a far preferable measure of comparative consumption values than would, say, the use of just wheat prices, 'for man lives not by bread alone'.

Economists commonly used such Consumer Price Indexes in order to 'deflate' or to 'discount' particular commodity price and wage series, *i.e.*, to take account of the effects of inflation or deflation. If the 'nominal' or money-of-account price or 'nominal' money wage indexes are divided by the Consumer Price Index, all having a common base period, the calculated result is known as the 'real' price or the 'real wage', expressed as an index number. For this study, all of the price and wage indexes have the common base period of the years 1451–1475 = 100.[57] The real wage therefore represents the purchasing power of the nominal or money wage (in coin), in terms of some defined basket of commodities, or in our modern era, goods and services, which, of course, includes textiles.

In this current study, I have utilized the same technique or principle to provide two other better estimates of the 'real' values of these Flemish, Brabantine, and English textiles over these three centuries, with two related measures. The first is to compare the values of these textiles in terms of their nominal prices (money-of-account values: in pence *groot* Flemish and English sterling pence) with the money-of-account values of three 'baskets of consumables': *i.e.*, the Flemish, Brabantine, and English. Thus I calculated the money-price index for each

of the textiles, using the common base of 1451–75; and, dividing that textile-price index by the Consumer Price Index, I thus produced a 'real price' index for each textile. This technique is not, however, employed in Table 1.2, lest it make the table even more difficult to comprehend; but it is employed in the ensuring tables on textile values.

The second, and entirely new method, is to compute the number of comparable baskets of consumables that master masons could have purchased with their annual money wage-income (in silver coin), for a standard work-year of 210 days: in southern England, Flanders, and Brabant (Antwerp and Mechelen).[58] Thus the final four columns of Table 1.2, nos. 16 to 19, calculate the equivalent value of each of these four textiles in terms of the number of these Brabantine 'baskets of consumables', *i.e.*, the number of such consumer baskets whose aggregate value, in Flemish pounds *groot*, equals the value of just one of each of these textiles. Thus, for the period 1538 to 1544, the mean values of these four textiles, expressed as their value or worth in numbers of the Brabant 'baskets of consumables' are, as follows: for Hondschoote single says, 0.689 basket; for Hondschoote double says, 1.580 baskets; for Ghent *dickedinnen* broadcloths, 10.685 baskets; and for Mechelen *rooslaken* broadcloths 8.804 baskets. Obviously this measure of comparison does not differ in any real terms from the alternative measure, *i.e.*, the purchasing power of wages, in demonstrating the great gulf between the values of says and luxury woollen broadcloths.

Finally, those using these statistical tables in this study may be puzzled by the use of the harmonic mean, instead of the standard arithmetic mean (average). In Table 1.2, the harmonic mean was used for columns 7–14, and 16–19: *i.e.*, in measuring the quantity of the four textiles in terms of the purchasing power of a mason's daily wage and the mean values of these textiles in terms the number of such baskets whose aggregate value equalled the value of the textile concerned.[59] To quote one statistical authority on this issue: the harmonic mean is 'a calculated average computed by finding the reciprocal of the arithmetic mean of the reciprocals of the numbers to be averaged'; and 'in economic computation the harmonic mean is used in averaging such data as time rates and rate-per-dollar prices' – or here, rate per daily wage or value of the consumer basket. The harmonic mean is always slightly less (by varying amounts) than the corresponding arithmetic mean; but it is the only method that provides consistently valid results (*i.e.*, arithmetic means do not do so).[60]

AN EXAMINATION OF THE TEXTILE PRICES: THEIR ARCHIVAL SOURCES AND VALIDITY IN THIS SURVEY

Since, however, Table 1.2 covers such a short period of time – just one decade in the 16th century – we need a far broader perspective, over a far longer period of time, to be reassured that woollens of this type continuously ranked as luxury or ultra-luxury objects of consumption in later-medieval and early-modern Europe. Such evidence to demonstrate the real values of luxury woollens in both the southern Low Countries and England, from the mid- 14th to mid- 16th centuries, can be found in the next and final set of statistical tables 3 to 16, for the late-medieval Low Countries and England (the final Table 1.17 presents prices for variety of European textiles in Polish markets, ca. 1400).

The cloth prices for Flanders and Brabant are those recorded in the annual civic treasurers'

account (*stadsrekeningen*) – for Bruges, Ghent, and Mechelen. The prices recorded, often containing as well the actual costs of dyeing, shearing, and finishing these woollens, cover a very wide range: for the purchase of the finest woollens for the mayor and aldermen (*schepenen*) down to fairly cheap and coarse woollens for policemen, the town musicians, and servants of various town officials; but the prices for the cheaper woollens are not presented in this study.[61] An inter-urban comparison of these textile prices with prices of textiles sold on other markets – when many of the same types of textile were purchased by several towns – provides convincing evidence that these are genuine market prices, and not notional prices.

For late-medieval England, the most consecutive list of cloth prices are those taken from similar cloth purchases at Cambridge and Winchester colleges, as published both by James E. Thorold Rogers and Lord William Beveridge; and I have extracted other English cloth prices (when exported) from the Customs Accounts in the National Archives (formerly the Public Record Office).[62]

THE ENSUING TABLES 1.3–1.16 ON CLOTH PRICES: A DESCRIPTIVE SUMMARY OF THEIR CONTENTS AND MEANINGS

Table 1.3 provides prices for Ghent woollens that were purchased for the civic aldermen, evidently for ceremonial purposes, for the period 1331–5 to 1556–70, in quinquennial means. There are two basic types of Ghent woollens in this table: the aforementioned *dickedinnen* broad cloths and *strijpte laken* (striped or ray cloths, with different colours for warps and wefts). The purchase prices for both textiles are for those woollens that the aldermen wore, for ceremonial occasions, in Ghent itself and at the annual Tournai Festival for the Virgin Mary. The prices are expressed in both current silver-based pounds *groot* (£) Flemish and index-number values, with the base used throughout this study: the mean of values for 1451–75 = 100.

An obvious method of presenting the 'real' values of the Ghent *dickedinnen* broadcloths over this entire period, the almost two and half centuries from 1331 to 1570, is a 'real-price' index by the method previously discussed.[63] Thus, if the nominal price of these textiles rose (in Flemish pounds *groot*) higher than did the value of the Flemish Commodity Price index, then the Real Price Index rose; if, on the other hand, the Flemish Commodity Price index rose higher than did the *dickedinnen* cloth-price index, then the Real Price Index had fallen.

For reasons explained earlier, the Van der Wee Commodity Price Index for Brabant (Antwerp-Lier-Brussels region) has been used to supplement this real-price series from 1500 to 1570.[64] Unlike Table 1.2, these Tables 1.3–1.16 present the cloth prices and values not in annual but in quinquennial (five-year) means. For both of the Ghent cloth prices and for both of the commodity price indexes, the mean index numbers are arithmetic means; but the mean 'real' cloth price index numbers are calculated by using the harmonic mean, for the same reasons provided earlier in this study (see Table 1.2). As is also readily seen in Table 1.3a, the nominal price index for the Ghent *dickedinnen* broadcloths peaked at 213.767 – *i.e.*, 113.767 percent higher than the mean for 1451–75 – in the quinquennium 1486–90, but the 'real' price index peaked at 184.894 in 1496–1500, and remained high in the first decade of

Table 1.3a: Prices and values of Ghent woollen cloths purchased for the civic aldermen and for the Tournai Festival: In pounds groot of Flanders, with cloth price indexes and the Flemish and Brabant commodity basket price indexes in quinquennial means, 1331–35 to 1566–70*

Years Ending (5 years)	Schepenen Dickedinnen Large: in £ groot Flem	Dickedinnen Price Index: 1451–75=100 £7.912	Flemish Price Index 1451–75=100 126.295d	Dickedinnen Real Price Index 1451–75=100 Harmonic Means	Tournai Festival: Schepenen Dickedinnen Large: Tournai in £ groot Flem	Tournai Festival Dickedinnen Price Index: 1451–75=100 £7.632
1331–35	2.747	34.712				
1336–40	2.788	35.235				
1341–45	3.512	44.387				
1346–50	2.874	36.326	50.571	68.676		
1351–55	3.749	47.378	60.646	77.362		
1356–60	4.330	54.723	87.540	62.287		
1361–65	4.857	61.389	94.425	64.858		
1366–70	5.377	67.956	107.401	63.066		
1371–75	5.333	67.395	115.222	58.578		
1376–80	6.890	87.078	111.662	76.628		
1381–85	7.500	94.787	119.193	83.846		
1386–90	7.192	90.890	124.719	72.096		
1391–95	5.538	69.991	88.510	79.077		
1396–00	5.759	72.783	89.796	81.054		
1401–05	5.856	74.009	88.531	83.105		
1406–10	5.843	73.851	105.261	69.632	5.800	76.000
1411–15	5.853	73.972	95.309	77.612	5.681	74.443
1416–20	6.077	76.798	107.381	71.409	5.590	73.248
1421–25	5.997	75.790	112.182	67.583	5.530	72.462
1426–30	6.047	76.419	117.773	64.910	5.490	71.935
1431–35	7.061	89.242	123.512	72.288	6.189	81.092
1436–40	7.182	90.763	140.166	65.055	6.764	88.631
1441–45	8.008	101.213	113.504	88.653	6.992	91.624
1446–50	7.719	97.558	109.984	88.543	6.762	88.611
1451–55	6.828	86.296	100.902	84.594	6.350	83.207
1456–60	7.857	99.294	117.855	84.126	7.185	94.151
1461–65	8.000	101.107	88.705	113.980	7.885	103.324
1466–70	8.188	103.476	96.520	107.107	8.553	112.067

Years Ending (5 years)	Schepenen Dickedinnen Large:	Dickedinnen Price Index:	Flemish Price Index	Dickedinnen Real Price Index	Tournai Festival: Schepenen Dickedinnen	Tournai Festival Dickedinnen Price Index:
1471–75	8.690	109.827	96.017	114.312	8.185	107.251
1476–80	9.063	114.535	117.213	97.812	8.860	116.096
1481–85	10.998	138.991	156.853	86.244	10.275	134.638
1486–90	16.914	213.767	184.511	114.407	15.575	204.086
1491–95	14.367	181.571	144.981	124.509	12.025	157.569
1496–00	14.667	185.366	100.255	184.894	11.593	151.903
1501–05	14.667	185.366	125.449	147.762	11.770	154.227
1506–10	14.130	178.582	114.801	155.589	12.485	163.596
1511–15	13.000	164.298	137.904	119.140	13.000	170.344
1516–20	13.130	165.941	150.264	110.419	13.135	172.113
1521–25	13.225	167.142	179.938	92.875		
1526–30	13.595	171.818	178.519	96.253		
1531–35	13.775	174.093	173.995	100.014		
1536–40	13.950	176.305	185.641	94.064		
1541–45	13.820	174.662	208.340	83.807		
1546–50	16.900	213.588	199.420	107.265		
1551–55	20.300	256.558	260.515	98.072		
1556–60	20.933	264.562	300.717	87.918		
1561–65	26.050	329.228	313.937	104.867		
1566–70	28.000	353.873	318.290	111.180		

*The Flemish Commodity Price Index (table 3) is used for the period 1351 to 1500, when that price index ceases; the Van der Wee Brabant Commodity Price Index is used for the following period from 1501 to 1570. Thus the 'real' prices for Ghent dickedinnen are in terms of the Flemish commodity price index to 1500, and in terms of the Brabant commodity price index thereafter, to 1570.

Sources:
Ghent Cloth: Stadsarchief Gent, Stadsrekeningen, Reeks 400: vols. 1–58; Algemeen Rijksarchief België, Rekenkamer, reg. no. 34,862.
Flemish Commodity Basket Price Index: Munro 2003a; 2005a.
Brabant Commodity Prices: Van der Wee 1975.

Harmonic Mean: In computing quinquennial, decennial, or other such mean values, the harmonic mean must be used, not the arithmetic mean. See Sloan and Zurcher 1953, 149–150: the harmonic mean is 'a calculated average computed by finding the reciprocal of the arithmetic mean of the reciprocals of the numbers to be averaged. ... In economic computation the harmonic mean is used in averaging such data as time rates and rate-per-dollar prices'.

Table 1.3b: Prices and values of Ghent woollen cloths purchased for the civic aldermen and for the Tournai Festival: In pounds groot of Flanders, with cloth price indexes and the Flemish and Brabant commodity basket price indexes in quinquennial means, 1331–35 to 1566–70*

Years (5 years)	Tournai Dickedinnen Real Price Index 1451–75=100 Harmonic Means	Strijpte Laken Schepenen £ groot Flemish	Strijpte Laken Schepenen Price Index 1451–75=100 £4.296	Real Price Index Strijpte Laken Schepenen 1451–75=100 Harmonic Means	Tournai Festival: Strijpte Laken Schepenen in £ groot Flem	Tournai Strijpte Lakenen Price Index: 1451–75=100 £5.381	Tournai Strijpte Lakenen Real Price Index 1451–75=100 Harmonic Means
1331–35		1.550	36.079				
1336–40							
1341–45							
1346–50		1.742	40.540				
1351–55		3.375	78.558	129.535			
1356–60		2.944	68.530	78.285			
1361–65		3.449	80.285	85.024			
1366–70		4.469	104.027	96.859			
1371–75		5.705	132.793	115.250			
1376–80		6.977	162.398	145.437			
1381–85		6.998	162.879	136.652			
1386–90							
1391–95		7.758	180.587	204.030			
1396–00							
1401–05							
1406–10	71.728	4.000	93.106	88.453	5.145	95.601	85.620
1411–15	78.198	4.065	94.610	99.266	4.805	89.287	93.640
1416–20	68.340	4.088	95.143	88.603	4.935	91.703	85.633
1421–25	64.489				4.871	90.511	80.587
1426–30	61.000	4.173	97.141	82.481	5.226	97.107	82.304
1431–35	65.565	4.398	102.359	82.874	5.433	100.948	81.728
1436–40	63.556	4.557	106.064	75.670	5.533	102.821	73.432
1441–45	80.675	4.621	107.557	94.760	5.661	105.191	92.570
1446–50	80.689	4.621	107.557	97.793	5.700	105.918	96.303
1451–55	81.718	4.621	107.557	106.595	5.635	104.711	103.632
1456–60	78.602	4.535	105.559	89.567	5.656	105.098	89.066
1461–65	115.787	4.100	95.434	107.585	5.207	96.751	109.134
1466–70	116.083	3.945	91.826	95.137	4.890	90.867	94.072

Years (5 years)	Tournai Dickedinnen	Strijpte Laken Schepenen	Strijpte Laken Schepenen	Real Price Index Strijpte Laken	Tournai Festival: Strijpte Laken	Tournai Strijpte Lakenen	Tournai Strijpte Lakenen
	Real Price Index 1451–75=100 Harmonic Means	£ groot Flemish	Price Index 1451–75=100 £4.296	Schepenen 1451–75=100 Harmonic Means	Schepenen in £ groot Flem	Price Index: 1451–75=100 £5.381	Real Price Index 1451–75=100 Harmonic Means
1471–75	111.101	4.280	99.624	103.756	5.520	102.574	106.044
1476–80	99.438	4.560	106.141	90.554	6.715	124.779	106.309
1481–85	83.328	4.555	106.025	67.595	8.460	157.205	98.706
1486–90	110.593	6.640	154.556	83.765	12.260	227.818	123.239
1491–95	109.201	7.050	164.100	113.187	12.850	238.781	166.410
1496–00	151.568	6.160	143.384	143.019	11.500	213.695	212.618
1501–05		6.110	142.220		11.100	206.262	
1506–10		6.180	143.849		11.740	218.155	
1511–15		6.420	149.436		12.750	236.923	
1516–20		6.600	153.625		13.500	250.859	

the 16th century (155.589 in 1506–10), before declining to reach a nadir of 83.807 in 1541–45. This index number indicates that, after the onset of the inflationary Price Revolution, commodity prices in general were rising faster than were the Ghent *dickedinnen* cloth prices. By the last quinquennium, 1566–70, however, the Ghent Real Cloth Price Index had risen to 111.180 (*i.e.*, 11.18 percent higher than the base period of 1451–75).

Table 1.4 provides these same Ghent woollen prices, comparing the price index for *dickedinnen* with the Flemish and Brabantine composite price indexes (*i.e.*, the 'baskets of consumables'); and it also compares these cloth values with the money-of-account values of the annual 'basket of consumables' (in Flemish pence *groot*). Table 1.5 continues with this same set of Ghent cloth price series in terms of the purchasing power of industrial craftsmen's daily wages: *i.e.*, by indicating the number of days' wages that a master mason in Bruges and Ghent would have spent in acquiring one of each of these textiles, from 1356–60 to 1496–1500 (*i.e.* in quinequennial means). Table 1.6 does the same in calculating the number of days' wages that an Antwerp master mason would have spent in acquiring each of these textiles, from 1401–05 to 1566–70.

In sum, Tables 1.4–1.6 present the prices, in pounds groot Flemish, and the values of the Ghent *dickedinnen* broadcloths for a remarkable span in the course of three centuries: or, more precisely, for 235 years, from 1336 to 1570. One is thus inclinded to ask whether or not the 'real' value of these textiles experienced any sustained increase over this long period: *i.e.*, did their relative value rise, in terms of both the number of days' wages that a master mason would have had to spend to acquire one of these, and in terms of the number of commodity baskets that equalled their value, as expressed in the pound groot money-of-account? While the Flemish data

Table 1.4: Prices and values of Ghent woollen cloths in relation to the values of a Flemish commodity basket and a Brabant commodity basket and their composite price indexes prices in pounds and pence groot of Flanders and Brabant in quinquennial means, 1331–1335 to 1566–1570

Years Ending (5 years)	Schepenen Dickedinnen Large: in £ groot Flemish	Dickedinnen Price Index: 1451–75= 100 £7.91244 groot Flemish	Flemish Price Index 1451–75= 100 126.2948d 1451–75= 100	Value of Flemish Commodity Basket in d. groot Flemish	Value of Ghent 1st Quality Dickedinnen in Flemish Commodity Baskets: Harmonic Mean	Value of Brabant Commodity Basket in d. groot Flemish	Brabant Price Index 1451–75= 100 155.016d 1451–75= 100	Value of Ghent 1st Quality Dickedinnen in Brabant Commodity Baskets: Harmonic Mean
1331–35	2.747	34.712						
1336–40	2.788	35.235						
1341–45	3.512	44.387						
1346–50	2.874	36.326	50.571	63.868	10.856			
1351–55	3.749	47.378	60.646	76.593	11.632			
1356–60	4.330	54.723	87.540	110.558	9.366			
1361–65	4.857	61.389	94.425	119.255	9.752			
1366–70	5.377	67.956	107.401	135.641	9.483			
1371–75	5.333	67.395	115.222	145.519	8.808			
1376–80	6.890	87.078	111.662	141.024	11.522			
1381–85	7.500	94.787	119.193	150.534	11.957			
1386–90	7.192	90.890	124.719	157.514	10.840			
1391–95	5.538	69.991	88.510	111.784	11.890			
1396–00	5.759	72.783	89.796	113.407	12.187			
1401–05	5.856	74.009	88.531	111.810	12.496	149.440	96.403	9.642
1406–10	5.843	73.851	105.261	132.939	10.470	159.400	102.828	8.785
1411–15	5.853	73.972	95.309	120.370	11.670	155.882	100.559	9.008
1416–20	6.077	76.798	107.381	135.616	10.737	164.113	105.868	8.867
1421–25	5.997	75.790	112.182	141.680	10.162	168.089	108.433	8.562
1426–30	6.047	76.419	117.773	148.741	9.760	179.277	115.651	8.091
1431–35	7.061	89.242	123.512	155.989	10.869	175.173	113.003	9.673
1436–40	7.182	90.763	140.166	177.022	9.782	194.440	125.432	8.853
1441–45	8.008	101.213	113.504	143.350	13.330	163.507	105.477	11.706
1446–50	7.719	97.558	109.984	138.904	13.313	154.360	99.577	12.011
1451–55	6.828	86.296	100.902	127.434	12.720	152.760	98.545	10.647

Years Ending (5 years)	Schepenen Dickedinnen Large: in £ groot Flemish	Dickedinnen Price Index: 1451–75= 100 £7.91244 groot Flemish	Flemish Price Index 1451–75= 100 126.2948d 1451–75= 100	Value of Flemish Commodity Basket in d. groot Flemish	Value of Ghent 1st Quality Dickedinnen in Flemish Commodity Baskets: Harmonic Mean	Value of Brabant Commodity Basket in d. groot Flemish	Brabant Price Index 1451–75= 100 155.016d 1451–75= 100	Value of Ghent 1st Quality Dickedinnen in Brabant Commodity Baskets: Harmonic Mean
1456–60	7.857	99.294	117.855	148.845	12.649	177.613	114.577	10.585
1461–65	8.000	101.107	88.705	112.030	17.138	141.173	91.070	13.600
1466–70	8.188	103.476	96.520	121.900	16.105	150.293	96.953	13.076
1471–75	8.690	109.827	96.017	121.264	17.188	153.240	98.854	13.605
1476–80	9.063	114.535	117.213	148.034	14.707	187.093	120.693	11.642
1481–85	10.998	138.991	156.853	198.097	12.968	241.440	155.752	10.628
1486–90	16.914	213.767	184.511	233.028	17.202	269.880	174.098	14.366
1491–95	14.367	181.571	144.981	183.104	18.721	206.507	133.216	16.626
1496–00	14.667	185.366	100.255	126.617	27.801	178.813	115.352	19.686
1501–05	14.667	185.366				194.467	125.449	18.101
1506–10	14.130	178.582				177.960	114.801	19.060
1511–15	13.000	164.298				213.773	137.904	14.595
1516–20	13.130	165.941				232.933	150.264	13.527
1521–25	13.225	167.142				278.933	179.938	11.377
1526–30	13.595	171.818				276.733	178.519	11.791
1531–35	13.775	174.093				269.720	173.995	12.252
1536–40	13.950	176.305				287.773	185.641	11.523
1541–45	13.820	174.662				322.960	208.340	10.267
1546–50	16.900	213.588				309.133	199.420	13.140
1551–55	20.300	256.558				403.840	260.515	12.014
1556–60	20.933	264.562				466.160	300.717	10.770
1561–65	26.050	329.228				486.653	313.937	12.846
1566–70	28.000	353.873				493.400	318.290	13.620

Sources:

Ghent Cloth: Stadsarchief Gent, Stadsrekeningen, Reeks 400: vols. 1–58; Algemeen Rijksarchief België, Rekenkamer, reg. no. 34,862.

Flemish Commodity Basket Price Index: Munro 2003a; 2005a.

Brabant Commodity Basket Price Index: Van der Wee 1975, with index numbers based on the publications by Munro above.

See the note on the harmonic mean in the sources for the previous table.

end in the late 15th century (wages in 1486, prices in 1500), the wage and price data for Brabant, and especially the Antwerp region, though available only from 1400, do continue to the end of the Ghent cloth price series, in 1570. In general, as the tables indicate, the purchasing power of a mason's wages in Antwerp was generally lower than in Bruges for most of the 15th century.[65]

For Flanders, we may observe that the value of a Ghent *dickedinnen* varied from a low of 8.088 Flemish commodity baskets in 1371–75 to an abnormal high of 27.801 Flemish baskets in the final quinquennium of 1496–1500, when, with the end of the civil-war (and of coinage debasements), commodity prices suddenly fell, while textile prices, having risen sharply, remained stable, and very high (as noted earlier). When the value of these Ghent woollens are measured in terms of the purchasing power of a master mason's daily wage (Table 1.5), we find that such a value ranged from a low of 131.89 days' wages in 1346–50 to a 14th-century high of 204.55 days' wages in 1381–85, then falling to a low of 139.90 days' wages in 1406–10, and then reaching a new high of 237.07 days' wages in 1481–85 (after which, as just noted, the Bruges wage data cease). In general, the relative value of the Ghent woollens was considerably higher in the second half of the 15th century than before, principally because English fiscal and commercial policies – which I have analysed elsewhere – had led to a severe increase in wool-export prices and thus in the cost of producing Flemish luxury woollens, still produced uniquely from the finest English wools.[66]

For the relative values of the Ghent *dickedinnen* in terms of the value of the Brabant commodity baskets and of the purchasing power of an Antwerp master mason's daily wage, the data are roughly comparable for the second half of the 15th century, if we take into account the lower real wages that still persisted in Antwerp. In the 16th century, the value of the Ghent *dickedinnen* in terms of the value of commodity baskets, and also in terms of the purchasing power of a mason's wage, remained high, until the onset of the inflationary Price Revolution, from about 1515, when, as noted earlier, commodity prices (in that basket) rose more than did textile prices and much more than did wages.[67] Thus, in the quinquennium 1506–10, a single Ghent *dickedinnen* was worth 19.060 Brabant commodity baskets (compared to, say, 11.706 baskets in 1441–45), and 436.505 days' wages (more than two year's income) of an Antwerp master mason. But by the quinquennium 1541–45, that relative value had fallen to just 10.267 Brabant commodity baskets, and 255.453 days' wages. By the end of this price series, in 1566–70, those relative values had risen once more: to 13.620 commodity baskets but only 208.966 days' wages of an Antwerp master mason. Over the entire 235 year period, the trend of Ghent cloth values was rising, especially from the mid-15th century, though not in any truly distinct and persistent fashion.

Sources for Table 1.5:
Ghent Cloth: Stadsarchief Gent, Stadsrekeningen, Reeks 400: vols. 1–58; Algemeen Rijksarchief België, Rekenkamer, reg. nos. 34, 862.
Bruges Masons Wages: Stadsarchief Brugge, Stadsrekeningen 1350–51 to 1485–85; Algemeen Rijksarchief, Rekenkamer, reg. nos. 32, 461–32532.
Munro 2003a; 2005a.

Table 1.5: Prices and values of Ghent woollen cloths in relation to the purchasing power of a master masons's wages in Bruges in pounds and pence groot of Flanders, in quinquennial means, 1331–5 to 1496–1500

Years Ending (5 years)	Schepenen Dickedinnen Large: Civic in £ groot Flemish	Dickedinnen Price Index: 1451–75=100 7.91244d groot Flemish	Tournai Festival: Strijpte Laken for the Schepenen in £ groot Flemish	Tournai Festival: Strijpte Laken Price Index: 1451–75=100 5.3815d gr.	Flemish Price Index 1451–75=100 126.2949d	Bruges: Master Mason's Daily in d. groot Flemish	No. of Days' Wages for Bruges Master Mason to buy one Dickedinnen Harmonic Means	No. of Days' Wages for Bruges Master Mason to buy one Strijpte Laken Harmonic Means
1331–35	2.747	34.712						
1336–40	2.788	35.235						
1341–45	3.512	44.387						
1346–50	2.874	36.326			50.571	5.000	131.885	
1351–55	3.749	47.378			60.646	5.200	171.457	
1356–60	4.330	54.723			87.540	6.000	171.811	
1361–65	4.857	61.389			94.425	6.850	169.459	
1366–70	5.377	67.956			107.401	8.000	160.559	
1371–75	5.333	67.395			115.222	8.000	159.725	
1376–80	6.890	87.078			111.662	8.800	186.733	
1381–85	7.500	94.787			119.193	8.800	204.545	
1386–90	7.192	90.890			124.719	10.867	158.835	
1391–95	5.538	69.991			88.510	9.000	147.680	
1396–00	5.759	72.783			89.796	9.850	140.319	
1401–05	5.856	74.009			88.531	10.000	139.732	
1406–10	5.843	73.851	5.145	95.601	105.261	10.000	139.902	123.475
1411–15	5.853	73.972	4.805	89.287	95.309	10.000	140.431	115.320
1416–20	6.077	76.798	4.935	91.703	107.381	10.000	145.620	118.440
1421–25	5.997	75.790	4.871	90.511	112.182	10.000	143.910	116.900
1426–30	6.047	76.419	5.226	97.107	117.773	10.000	145.085	125.420
1431–35	7.061	89.242	5.433	100.948	123.512	10.800	156.874	120.873
1436–40	7.182	90.763	5.533	102.821	140.166	11.000	156.377	120.727
1441–45	8.008	101.213	5.661	105.191	113.504	11.000	174.258	123.509
1446–50	7.719	97.558	5.700	105.918	109.984	11.000	168.268	124.364
1451–55	6.828	86.296	5.635	104.711	100.902	11.000	147.761	122.945
1456–60	7.857	99.294	5.656	105.098	117.855	11.000	171.175	123.400
1461–65	8.000	101.107	5.207	96.751	88.705	11.000	174.545	113.600
1466–70	8.188	103.476	4.890	90.867	96.520	11.000	178.562	106.691
1471–75	8.690	109.827	5.520	102.574	96.017	11.000	189.568	120.436
1476–80	9.063	114.535	6.715	124.779	117.213	11.000	197.580	146.509
1481–85	10.998	138.991	8.460	157.205	156.853	11.000	237.068	184.582
1486–90	16.914	213.767	12.260	227.818	184.511			
1491–95	14.367	181.571	12.850	238.781	144.981			
1496–00	14.667	185.366	11.500	213.695	100.255			

Table 1.6: Prices and values of Ghent woollen cloths in relation to the purchasing power of a master mason's wages in Antwerp and the Brabant Commodity Basket Price Index in pounds and pence groot of Flanders and of Brabant, quinquennial means, 1401–1405 to 1566–1570

Years Ending (5 years)	Schepenen Dickedinnen Large: in £ groot Flemish	Dickedinnen Price Index 1451–75=100 £7.912 groot	Tournai Festival: Strijpte Laken for Schepenen in £ groot Flemish	Tournai Festival: Strijpte Laken Price Index: 1451–75=100 5.3815d	Brabant Price Index 1451–75=100 155.016d groot Flem	Antwerp: Mean Craftsman's Daily Wage in d. groot Flemish	No. Days' Wages for a Master Mason in Antwerp to buy one Ghent Dickedinnen: Harmonic Means	No. Days' Wages for a Master Mason in Antwerp to buy one Ghent Strijpte Laken: Harmonic Means
1401–05	5.856				96.403	7.313	192.063	
1406–10	5.843	73.851	5.145	95.601	102.828	7.500	186.989	164.633
1411–15	5.853	73.972	4.805	89.287	100.559	6.817	206.020	169.161
1416–20	6.077	76.798	4.935	91.703	105.868	6.573	221.421	180.106
1421–25	5.997	75.790	4.871	90.511	108.433	6.012	239.385	194.021
1426–30	6.047	76.419	5.226	97.107	115.651	5.775	251.180	216.688
1431–35	7.061	89.242	5.433	100.948	113.003	6.403	264.981	203.518
1436–40	7.182	90.763	5.533	102.821	125.432	6.333	271.603	209.628
1441–45	8.008	101.213	5.661	105.191	105.477	7.200	266.947	188.646
1446–50	7.719	97.558	5.700	105.918	99.577	7.500	246.793	182.400
1451–55	6.828	86.296	5.635	104.711	98.545	7.500	216.716	180.221
1456–60	7.857	99.294	5.656	105.098	114.577	7.500	251.057	180.862
1461–65	8.000	101.107	5.207	96.751	91.070	7.500	256.000	166.493
1466–70	8.188	103.476	4.890	90.867	96.953	7.500	261.890	156.425
1471–75	8.690	109.827	5.520	102.574	98.854	7.500	278.034	175.480
1476–80	9.063	114.535	6.715	124.779	120.693	7.500	289.784	213.296
1481–85	10.998	138.991	8.460	157.205	155.752	7.500	347.700	268.930
1486–90	16.914	213.767	12.260	227.818	174.098	8.100	479.198	353.271
1491–95	14.367	181.571	12.850	238.781	133.216	7.500	459.576	410.465

Years Ending (5 years)	Schepenen Dickedinnen Large: in £ groot Flemish	Dickedinnen Price Index 1451–75=100 £7.912 groot	Tournai Festival: Strijpte Laken for Schepenen in £ groot Flemish	Tournai Festival: Strijpte Laken Price Index: 1451–75=100 5.3815d	Brabant Price Index 1451–75=100 155.016d groot Flem	Antwerp: Mean Craftsman's Daily Wage in d. groot Flemish	No. Days' Wages for a Master Mason in Antwerp to buy one Ghent Dickedinnen: Harmonic Means	No. Days' Wages for a Master Mason in Antwerp to buy one Ghent Strijpte Laken: Harmonic Means
1496–00	14.667	185.366	11.500	213.695	115.352	7.700	457.153	357.799
1501–05	14.667	185.366	11.100	206.262	125.449	7.750	454.204	343.622
1506–10	14.130	178.582	11.740	218.155	114.801	7.750	436.505	363.340
1511–15	13.000	164.298	12.750	236.923	137.904	8.600	362.791	356.316
1516–20	13.130	165.941	13.500	250.859	150.264	9.250	340.660	350.270
1521–25	13.225	167.142			179.938	9.500	334.173	
1526–30	13.595	171.818			178.519	9.750	334.571	
1531–35	13.775	174.093			173.995	9.350	353.629	
1536–40	13.950	176.305			185.641	11.100	297.893	
1541–45	13.820	174.662			208.340	12.950	255.453	
1546–50	16.900	213.588			199.420	14.850	272.778	
1551–55	20.300	256.558			260.515	15.000	323.077	
1556–60	20.933	264.562			300.717	16.200	310.073	
1561–65	26.050	329.228			313.937	27.000	231.869	
1566–70	28.000	353.873			318.290	21.750	308.966	

Sources:
Ghent Cloth Prices: Stadsarchief Gent, Stadsrekeningen, Reeks 400: vols. 1–58; Algemeen Rijksarchief België, Rekenkamer, reg. nos. 34, 862.
Brabant Commodity Prices: Van der Wee 1975.
Antwerp Wages: Van der Wee 1963.

THE LATE-MEDIEVAL SCARLETS: THE COSTLIEST AND MOST LUXURIOUS OF ALL LATE-MEDIEVAL WOOLLENS

Tables 1.7–1.10 now introduce us to the most luxurious of all late-medieval woollens: the 'scarlets' (*scaerlakenen* in medieval Flemish; *scarlaken* in Dutch; *Scharlach* in German; *écarlates*, in French; *scarlatti*, in Italian). As can readily be seen in these tables, such 'scarlets' were substantially, indeed vastly, more expensive than any other dyed cloths, rivalling fine silks in value.[68] Such 'scarlet' woollens were, to be sure, also naturally woven from the very finest English wools, then the best in the world. That is no key distinction, however, for many other fine woollen broadcloths were also woven from these very same costly wools (in Italy and France, as well as in the Low Countries and England).[69]

For reasons that I have examined at length in several other publications, the true essence of any medieval scarlet was in containing, if not necessarily uniquely, the vivid red dyestuff known as *kermes*, a word derived from the Arabic *qirmiz*, meaning 'worm'. Similarly, the late-Latin term *vermiculus*, also meaning a 'worm', is the origin of the related red colour term 'vermilion'. The *kermes* dyestuff was extracted at enormous cost from the eggs of Mediterranean and Caucasian (Georgian-Armenian) scale-insects of the genus *Kermococcus vermilio* (sometimes referred to incorrectly as *Coccus ilicis*). Because these desiccated eggs resembled grains – of wheat, salt, sand – the common term for this medieval dyestuff was indeed 'grain' (English): *granum* in Latin, *grano* in Italian, *graine* in French, *grein* in Flemish and German. Subsequently, in early-modern Europe, a somewhat cheaper dyestuff, Mexican *cochineal,* came to displace *kermes* for producing scarlet dyes; and from the 1860s they were displaced by synthetic aniline dyes.[70]

While late-medieval, early-modern English texts reserved the word 'scarlet' for only those fine woollens dyed uniquely in *kermes*, texts from the late-medieval Low Countries used the equivalent term *scarlaken* (or: *scaerlaken*) to refer to a variety of red and differently coloured woollens: such as 'brown', 'perse' (a blue-greyish or ashen purple) or 'murrey' (mulberry) and 'sanguine' (bluish red) *scaerlaken.* The explanation to resolve this seeming paradox is quite simple. For a wide variety of late-medieval Flemish and Brabantine textile accounts indicate, without exception, that all such *scarlaken* were first dyed with blue-woad (or indigo) in the wools or yarns, sometimes with other dyestuffs, and then redyed 'in the piece' (after fulling) with kermes (grain) to produce this varied range of shades or colours. None of the accounts on textile expenditures provides any evidence that any of these variously coloured *scarlaken* were any cheaper than those dyed uniquely in kermes, known as *roode scaerlaken*; and all, without exception, were always vastly more expensive than any other fine woollens dyed without kermes.[71]

TABLES 1.7–1.9: ON FLEMISH SCARLETS AND OTHER FINE DYED WOOLLENS, IN BRUGES AND MECHELEN

The first of these tables, Table 1.7a–b, covering the period from 1301 to 1496 (in quinquennial means), presents Bruges' cloth prices: again in pounds *groot* Flemish, for those broadcloths purchased for the mayors and aldermen of Bruges. The significant feature of Table 1.7a is in distinguishing the prices for 'scarlets' (*scaerlakenen*), those dyed partly

Table 1.7a: Prices of Bruges scarlets and other dyed woollen broadcloths purchased for the upper echelons of the Bruges civic government and their values in relation to the price of a basket of Flemish consumables and to the purchasing power of the annual money-wage income of a Bruges master building craftsman in pence (d) and pounds (£) groot Flemish, in quinquennial means, 1331–35 to 1496–1500

Years (5 years)	Woollens £ groot Mean Value	£ groot mean value of non-Scarlets	Scarlets Mean Price in £ groot	Value of Basket of Consumables in d groot Flem.	Consumer Price Index (in baskets) Mean 1451–75 =100 = 126.295d	Daily Wage of a Master Mason in Bruges in d groot Flemish	Money Wage Income in £ groot Flem (210 days)
1331–35	1.616	1.417	1.888				
1336–40	1.886	1.690	2.175				
1341–45	2.093	1.733	3.447				
1346–50	3.318	2.274	4.086	63.868	50.571	5.000	4.375
1351–55	5.187	3.496	7.393	76.593	60.646	5.200	4.550
1356–60	6.892	3.757	8.171	118.935	94.172	6.000	5.250
1361–65	5.881	4.194	8.574	119.255	94.425	6.850	5.994
1366–70	6.626	4.678	12.092	135.641	107.401	8.000	7.000
1371–75	8.345	6.804	15.450	145.519	115.222	8.000	7.000
1376–80	8.438	7.226	14.048	141.024	111.662	8.800	7.700
1381–85	7.838	7.004	13.781	150.534	119.193	8.800	7.700
1386–90	9.592	7.662	17.151	157.514	124.719	10.867	9.508
1391–95	8.180	6.280	18.004	111.784	88.510	9.000	7.875
1396–1400	7.663	6.353	17.025	113.407	89.796	9.850	8.619
1401–05	7.780	6.245	15.430	111.810	88.531	10.000	8.750
1406–10	6.879	5.755	11.635	132.939	105.261	10.000	8.750
1411–15	6.264	5.474	11.263	120.370	95.309	10.000	8.750
1416–20	5.815	5.417	10.863	135.616	107.381	10.000	8.750
1421–25	5.459	5.459		141.680	112.182	10.000	8.750
1426–30	6.674	5.653	11.150	148.741	117.773	10.000	8.750
1431–35	7.352	6.474	13.114	155.989	123.512	10.800	9.450
1436–40	7.135	7.135		177.022	140.166	11.000	9.625
1441–45	7.920	7.301	10.596	143.350	113.504	11.000	9.625
1446–50	8.632	6.859	11.966	138.904	109.984	11.000	9.625
1451–55	6.818	6.818		127.434	100.902	11.000	9.625
1456–60	6.480	6.480		148.845	117.855	11.000	9.625
1461–65	6.833	6.833		112.030	88.705	11.000	9.625
1466–70	6.958	6.958		121.900	96.520	11.000	9.625
1471–75	7.495	7.495		121.264	96.017	11.000	9.625
1476–80	7.142	7.142		148.034	117.213	11.000	9.625
1481–85	9.158	8.479	18.554	198.097	156.853	11.000	9.625
1486–90	14.363	14.363		233.028	184.511		
1491–95	8.528	8.528		183.104	144.981		
1496–1500	8.769	8.769		126.617	100.255		

The physical composition of the Flemish basket of consumables, with their values in Flemish pence (d) groot for the base period, 1451–75:
45.461 litres of wheat (13.279d), 36.369 litres of rye (7.062d), 18.184 litres of barley (2.867d), 24.243 litres of peas (7.341d); 163.659 litres of barley for brewing malt (25.805d), 13.610 kg of butter (36.087d), 13.610 kg of cheese (8.578d), 1.225 metres of coarse woollen cloth (25.276).
Sources:
Cloth Prices: Stadsarchief Brugge, Stadsrekeningen, 1330/31 to 1495/96; Algemeen Rijksarchief België, Rekenkamer, nos. 32,461–32,550.
Wages and the Flemish Commodity Basket values: Munro 2003a; 2005a.

Table 1.7b: Prices of dyed Bruges woollen broadcloths purchased for the Bruges government and their values in relation to the price of a basket of Flemish consumables and the purchasing power of the annual money-wage income of a Bruges master building craftsman, in pence (d) and pounds (£) groot Flemish, in quinquennial means, 1331–35 to 1496–1500

Years (5 years)	No of Baskets of Consumables with value of a scarlet	No of Baskets of Consumables with value of a non-scarlet dyed broadcloth	No of Days' Wages of a Master Mason Required to buy one Scarlet Woollen Broadcloth	No of Days' Wages of a Master Mason Required to buy one non-Scarlet Woollen Broadcloth	No of baskets of consumables to be purchased with annual money wages of a master mason
1331–35					
1336–40					
1341–45					
1346–50	15.352	8.544	196.105	109.133	16.440
1351–55	18.614	10.525	287.679	154.970	14.188
1356–60	15.701	7.321	314.248	144.418	11.397
1361–65	18.791	9.184	310.076	152.610	11.956
1366–70	21.008	8.137	352.687	136.456	12.386
1371–75	22.772	10.527	462.661	201.022	11.545
1376–80	24.558	12.869	330.649	173.321	12.898
1381–85	17.063	10.638	277.122	188.442	12.053
1386–90	24.931	11.358	363.710	168.039	14.152
1391–95	37.231	13.313	476.300	165.136	16.908
1396–1400	36.206	13.260	419.161	152.614	18.241
1401–05	32.875	13.383	368.758	149.766	18.782
1406–10	19.655	10.173	267.693	136.895	15.797
1411–15	21.537	10.900		130.932	17.446
1416–20	18.226	9.352	260.368	128.612	15.485
1421–25		9.058		127.591	14.822
1426–30	16.967	9.025	262.470	134.726	14.118
1431–35	21.061	9.965	285.972	143.786	14.519
1436–40		9.762		154.920	13.049
1441–45	17.416	12.179	230.575	159.035	16.114
1446–50	19.969	11.827	253.696	149.149	16.630
1451–55		12.760		147.930	18.127
1456–60		10.455		141.024	15.519
1461–65		14.651		148.825	20.619
1466–70		13.656		151.310	18.950
1471–75		14.766		162.567	19.049
1476–80		11.629		155.141	15.605
1481–85	18.181	10.016	404.818	182.580	11.661
1486–90		14.793			
1491–95		11.067			
1496–1500					

b. Total value of the basket in 1451–75 = 126.295d groot Flemish.

Sources:

Cloth Prices: Stadsarchief Brugge, Stadsrekeningen, 1330/31 to 1495/96; Algemeen Rijksarchief België, Rekenkamer, nos. 32,461–32,550.

Wages and the Flemish Commodity Basket values: Munro 2003a; 2005a.

or wholly with kermes ('in grain'), from all the other broadcloths whose various colours were based on other dyestuffs, excluding kermes. Part 1.7b of this table provides again the number of days' wages that a Bruges master mason would have spent in acquiring both a scarlet and a differently dyed woollen broadcloth. Similarly, it also provides the value of both scarlets and other broadcloths in terms of the money-of-account value of the Flemish 'basket of consumables'. This table ends in 1496 when individual cloth prices ceased to be given in the Bruges *stadsrekeningen*. In comparing Tables 1.7a and 1.7b, one will observe that, in general, with occasional exceptions, the prices for non-scarlet Bruges woollens were lower than those for the Ghent *dickedinne*n broadcloths (Tables 1.3–1.6); but the trends for cloth prices and relative values are roughly similar, as would be expected.

Tables 1.8–1.10 concern the prices and values of scarlets and other high-priced woollen broadcloths produced in Mechelen.

Table 1.8 itself presents the prices and values of Mechelen scarlets in their heyday, from 1361–65 to 1411–15, in quinquennial means: in pounds *oude groot* of Mechelen, converted into pounds *groot Flemish* from 1370, when reliable exchange rates become available (from the town accounts). Once more the 'real' values of these scarlet broadcloths are presented in terms of the number of days that a master mason (in Bruges) would have had to spend to acquire one of these scarlet woollen broadcloths (40 ells = 28.0 metres); and the values of these scarlets are also expressed in terms of the money-of-account values of the Flemish commodity basket: *i.e.*, the number of such baskets equal in value to the price of one scarlet. The companion Table 1.9 presents the costs of dyeing and finishing these Mechelen scarlets, in quinquennial means, again for the same time period: 1361–65 to 1411–15.

The table does not go past 1415, because the last recorded purchase of a scarlet in Mechelen was in 1416. The number of such scarlets similarly diminished sharply in the Flemish towns from the early 15th century; and they virtually disappeared from the town accounts of cloth purchases in Bruges, Mechelen, Ghent, and other cities by the later 15th century. Why scarlets, having been so highly favoured throughout Europe in the 14th century, especially in the era following the Black Death, as the most luxurious and the most expensive of all European woollens, then fell out of favour – at least in northern Europe – is a question not easily answered. But I have offered an explanatory hypothesis for this curious phenomenon in a recent article, whose key points are summarized below in the introduction to Table 1.10.[72]

Finally, a close examination of the often very detailed textile accounts clearly vindicate the view that the true essence of the medieval scarlet was its *kermes* dyestuffs, for they do not indicate that any other factor, other than costly fine English wools, had any significant bearing on these prices. Contrary to popular but quite erroneous views still prevalent in the textile-history literature, the true nature and the high value of scarlets had nothing to do with shearing and the finishing processes, which, as Table 1.9 and the following details clearly demonstrate, were always far too low to justify any such interpretation, in particular the still favoured 'shearing' hypothesis.[73] In providing the costs of producing scarlets in Mechelen, from 1361 to 1415, Table 1.9 indicates that the kermes (grain) dyestuff often cost more than the fine English wools used in weaving them.

Those dyeing costs were a function or combination of both the quantity of kermes used

Table 1.8: Prices and values of scarlets manufactured in Mechelen: in pounds oude groot and pounds groot Flemish compared to the wages of a Bruges master mason and the values of a Flemish commodity basket: in pence and pounds (£) groot Flemish

Index: 1451–1475 = 100
one scarlet was 40 ells long = 27.56 metres

Years	Price in £ Oude groot	Price in £ groot Flemish	Wages of a Master Mason in Bruges: in d groot Flemish	Value of a Flemish Commodity Basket in in d groot Flemish	Value of a Flemish Commodity Basket in In £ groot Flemish	Flemish Commodity Price Index 1451–75=100	No. of Days' Wages for a Master Mason to Purchase a Mechelen Scarlet	Value of the Mechelen Scarlet in Flemish Commodity Baskets
1361–65	2.6936							
1366–70	4.1072		8.000	135.641	0.565	107.401		
1371–75	4.2471	10.553	8.000	145.519	0.606	115.222	315.160	17.376
1376–80	5.5614	14.371	8.800	141.024	0.588	111.662	373.371	22.973
1381–85	4.5887	12.279	8.800	150.534	0.627	119.193	327.037	19.412
1386–90	4.4529	12.947	10.867	157.514	0.656	124.719	273.942	18.514
1391–95	4.4478	9.929	9.000	111.784	0.466	88.510	262.899	21.061
1396–1400	4.5858	10.318	9.850	113.407	0.473	89.796	245.142	22.069
1401–05	5.7825	13.011	10.000	111.810	0.466	88.531	309.947	27.676
1406–10	6.2204	13.996	10.000	132.939	0.554	105.261	333.387	26.089
1411–15	7.3744	17.470	10.000	120.370	0.502	95.309	410.768	32.868

Sources:
Stadsarchief Mechelen, Stadsrekeningen Series I: 1360–1415.
For wages of the Bruges masons and for the Flemish Price Index, see sources in Table 1.3, above, and also Munro 2003a; 2005a.

and the often sharply varying prices of the dyestuff (with different origins) itself. During this period, the quantity and the cost of the kermes used in producing a single *scaerlaken* ranged from a low, and singularly unusual low, of 8.287 kg in Easter 1403, when the cost of the kermes (grain) was 55.47 percent of the value of the undyed woollen broadcloth and 23.36 percent of the value of the fully finished scarlet. The highest quantity of kermes recorded in producing a single *scaerlaken* was three times as much, 25.809 kg, in Easter 1380, when the cost of the kermes was 154.91 percent of the value of the undyed cloth and 58.73 percent of the fully finished scarlet. But since the cost of the grain was also determined by its unit market value, sometimes kermes accounted for an even greater share of the total value of the scarlet: *e.g.*, in Easter 1379, for 181.32 percent of the value of the undyed woollen and 62.29 percent of the final value.

In striking contrast, for the cloth-finishing processes, the mean cost of the labour involved

Table 1.9: Costs of dyeing scarlets at Mechelen, 1361–1415, in pounds groot oude of Brabant and pounds groot Flemish, in quinqennial means, 1361–54 to 1411–1415

Years (5 Years) Mechelen	Whites or Blues: Costs	Percent of Final	lb of Grain*	kg of Grain	Price in d per lb	Price in d per kg	Cost of Grain in £ oude groot	Grain as Percent of total	Grain as Percent of cost of white cloth
1361–65	1.741	64.65%	22.548	10.580	9.41	20.05	0.884	32.81%	50.76%
1366–70	2.137	52.03%	24.906	11.687	18.12	38.62	1.881	45.79%	88.00%
1371–75	2.446	57.59%	30.275	14.207	13.38	28.52	1.688	39.76%	69.04%
1376–80	2.534	45.56%	38.688	18.154	17.73	37.78	2.858	51.39%	112.80%
1381–85	2.473	53.88%	32.663	15.327	14.46	30.81	1.968	42.88%	79.57%
1386–90	2.523	56.66%	25.063	11.761	17.00	36.23	1.776	39.87%	70.37%
1391–95	2.796	62.85%	23.389	10.975	15.69	33.44	1.529	34.38%	54.70%
1396–1400	2.945	64.22%	23.625	11.086	15.56	33.16	1.532	33.40%	52.01%
1401–05	3.705	64.07%	30.616	14.367	15.23	32.46	1.943	33.60%	52.44%
1406–10	3.993	64.19%	30.482	14.304	16.24	34.60	2.062	33.16%	51.65%
1411–15	4.107	55.70%	35.289	16.559	20.69	44.09	3.042	41.25%	74.07%

Years (5 Years) Mechelen	Dyeing and Shearing £ oude gr	Finishing Costs of Percent of Total	Total Costs and Price	Price in £ Groot Flemish
1361–65	0.068	2.54%	2.694	
1366–70	0.089	2.18%	4.107	
1371–75	0.113	2.66%	4.247	10.553
1376–80	0.170	3.05%	5.561	14.371
1381–85	0.149	3.24%	4.589	12.279
1386–90	0.154	3.46%	4.453	12.947
1391–95	0.123	2.77%	4.448	9.929
1396–1400	0.109	2.37%	4.586	10.318
1401–05	0.135	2.33%	5.783	13.011
1406–10	0.165	2.66%	6.220	13.996
1411–15	0.225	3.05%	7.374	17.470

40 ells long = 27.56 metres (1 ell = 0.689 metres)

Sources:
Stadsarchief Mechelen, Stadsrekeningen, Series I: nos. 3–92; Algemeen Rijksarchief België (Brussels), Rekenkamer, registers nos. 41,218–222.

**Mechelen pound = 469.25 grams*

in dyeing and shearing combined was only, on average for the entire period, 2.75 percent of the total values of these scarlets, ranging from a low of 1.03 percent in 1363 to an abnormal high of 4.56 percent at Christmas 1380. In the 15th-century Ypres accounts (for 1406 – 86; not presented here), the mean cost of the kermes dyestuffs (averaging 29.85 lb or 13 .85 kg per cloth), was 36.1 percent of the total cloth price; the labour cost of dyeing, 3.4 percent; and the cost of shearing and finishing, just 1.5 percent of the cloth price.[74] Clearly the labour costs in cloth finishing had virtually no significance for the final price of medieval scarlets.

While it remains perfectly true that, in the heyday of the late-medieval scarlet, such woollens always cost substantially more than any other fine woollen broadcloth, by the 16th century, the 'real values' of other dyed broadcloths came to approach rather more closely the 'real values' of mid-15th century scarlets. Thus, as the previously examined Table 1.2 indicates, for the year 1535, an Antwerp master mason would have had to spend 348.31 days' wages to acquire one Ghent *dickedinnen* broadcloth. But, earlier, in 1441–45 (when real wages had reached their medieval peak), a Bruges mason would have spent only an average of 230.575 days' wages to purchase a scarlet (Table 1.7b).[75] In Mechelen, in late 1398, a master mason would have spent even less, only 209.76 days' wages, to purchase a scarlet (Table 1.8).[76] On the other hand, in 14th-century Bruges, a master mason would have had to spend the following number of day's wages just in order to buy one Bruges-made scarlet (*scaerlaken)*: in 1353, 468.00 days; in 1371, 483.16 days; in 1385, 601.88 days; in 1391, 530.67 days' wages.[77] Returning to Mechelen, in 1415, we find that a Bruges master mason would have had to spend 410.77 days' wages to buy one Mechelen-made scarlet.[78] Obviously, the real values of scarlets varied considerably – chiefly because of differences in both the costs of the dyestuffs and the quantities used – but also, as will be explained further in the conclusion to this study, because of changes in the purchasing power of labour and in the values of the 'baskets of consumables'.

TABLE 1.10: MECHELEN ROOSLAKEN, 1470–1550

In Mechelen, as I have sought to demonstrate in a recent article, we find another remarkable transformation in luxury textile consumption by the later 15th century: a marked shift from not only scarlets but also from other red-coloured (including mixed colours) broadcloths to those dyed with very dark colours, which became predominantly black, overwhelmingly so by the 16th century. Thus, of all such woollens purchased for the burgermasters and aldermen of Mechelen's town government, black accounts for the colour of 75.04 percent of the woollens (and 81.67 percent, by value), in the eighty-year period from 1471 to 1550 (186.25 out of 190.833 so purchased), but almost 100 percent in the period 1500 to 1550.[79] The accompanying Table 1.10 presents, again in quinquennial means, the prices, in both pounds *groot* Brabant and Flemish, of black (*zwart*) *rooslaken* broadcloths, from 1471–75 to 1546–50. These Mechelen *rooslaken* broadcloths are the same as those that were featured in Table 1.2, above. This table similarly presents the real values of these textiles in terms of the number of days' wages that an Antwerp mason would have spent in acquiring one of these cloths, and also the number of days' wages required to purchase a Brabant 'commodity basket'.

Table 1.10: Mechelen Rooslaken woollen cloths: values in pounds groot Flemish and Brabant and values in terms of the purchasing power of an Antwerp mason's daily wage and the value of a Brabant commodity basket (Index numbers: 1451–1475 = 100) in quinquennial means, 1471–75 to 1546–50

Year	Mechelen Rooslaken Blacks Price £ Brabant	Mechelen Rooslaken Blacks Price £ Flemish	Antwerp: Master Mason's Mean Daily Wage in d groot Flemish (summer-winter)	Antwerp: Value of Commodity Basket in d groot Flem	Antwerp: Commodity Price Index 1451–75=100	No. of Days Wages for Master Mason to buy one commodity basket	No. of Days Wages to for Master Mason to buy one Zwart-Laken
1471–75	10.395	6.930	11.250	153.24	98.854	13.601	140.522
1476–80	11.630	8.053	11.250	187.09	120.693	16.354	171.450
1481–85	10.339	6.893	11.250	241.44	155.752	20.414	136.157
1486–90	10.314	6.876	12.150	269.88	174.098	22.059	127.495
1491–95	12.785	8.524	11.250	206.51	133.216	17.403	178.007
1496–00	14.407	9.604	11.550	178.81	115.352	15.376	199.557
1501–05	14.879	9.919	11.625	194.47	125.449	16.692	204.716
1506–10	15.178	10.119	11.625	177.96	114.801	15.262	208.788
1511–15	16.431	10.954	12.900	213.77	137.904	16.577	204.030
1516–20	17.022	11.348	13.875	232.93	150.264	16.752	196.131
1521–25	16.739	11.159	14.250	278.93	179.938	19.246	187.998
1526–30	16.600	11.067	14.625	276.73	178.519	18.875	181.607
1531–35	16.747	11.165	14.025	269.72	173.995	18.959	191.028
1536–40	17.059	11.373	16.650	287.77	185.641	17.258	164.074
1541–45	16.661	11.107	19.425	322.96	208.340	16.557	136.384
1546–50	17.994	11.996	22.275	309.13	199.420	13.726	128.952

Source:
Stadsarchief Mechelen, Stadsrekeningen 1470/71–1549/50: Series I.

THE NEXT SET OF TEXTILE TABLES: 1.11–1.16: FOR ENGLAND AND THE SOUTHERN LOW COUNTRIES

Table 1.11 provides the prices, in pounds sterling, of English woollen broadcloths, in quinquennial means, from 1361–65 to 1516–20, in pounds sterling: first and second quality broadcloths purchased for the colleges of Cambridge (for clerics and servants) and for Winchester (first quality only). These prices may be compared to the quinquennial means of cloth export values: those from the two major ports of London and Southampton, and for all English ports together. Cloth export prices are given not only in pounds sterling, but also in the equivalent values in pounds *groot* Flemish and in Florentine gold florins. Table 1.12 provides (again) the quinquennial mean prices, in pounds sterling, of both first and second quality woollens purchased for the Cambridge colleges and Winchester college (scholars and servants). It also presents the quinquennial means of a master mason's daily wage (in SE England), the value in pence sterling of the Phelps Brown and Hopkins 'basket of consumables', and the Consumer Price Index (base 1451–75 = 100), as calculated from the values of these baskets.[80] This table also differs from the previous one in extending the price and value series from 1521 to 1560. Table 1.13 provides the values of the first-quality woollens, for both Cambridge and Winchester colleges, in terms of the number of days' wages that a master mason at Cambridge would have spent in acquiring one of each, and the equivalent values of these textiles expressed as the number of the Phelps Brown and Hopkins commodity baskets. Again, the means for these four value series are harmonic, rather than arithmetic.

As will be readily apparent from all these tables, these English woollen broadcloths, though considerably less expensive than the finer or finest Flemish and Brabantine woollens, were still not 'cheap'; and demonstrably they were luxury cloths, by any measure. In the later 14th century and for much of the 15th century, the first-quality woollens purchased at Cambridge were generally more expensive than those purchased at Winchester; but from the early 16th century Winchester's first-quality woollens were generally the more expensive – and obviously far too expensive for any English master masons.[81]

The export-price statistics, taken from the English Customs Accounts, expressed here in both pounds sterling and pounds *groot* Flemish, in Table 1.11, do offer an interesting perspective: in validating the prices of woollens purchased for these colleges, while the mean values are necessarily, by that arithmetic computation, lower than the prices for the first-quality woollens at those colleges. While nominal prices are an imperfect measure, for the reasons mentioned earlier (especially after Edward IV's 20.0 percent debasement of the silver coinage in 1464), that rise in value can also be seen in the export price-statistics (Table 1.11), which show a rise in the mean value of a broadcloth from £1.403 sterling (£1.471 *groot* Flemish) in 1396–1400 to one of £3.606 sterling (£5.308 *groot* Flemish) in 1511–15, just before this series ends in 1520.

A similar picture emerges from Table 1.13, in presenting the values of the first-quality English woollens, as measured in the number of days' wages required for their purchase by a master mason. That number ranged from an unusual low of 83.150 days' wages in 1436–40 (Cambridge) to a high of 133.49 days' wages in 1381–85 (also Cambridge);

Table 1.11: Prices of English woollens purchased for scholars at Cambridge and Winchester Colleges, of English woollens exported from London and Southampton, and mean values of cloth exported from all English ports: in pounds sterling, in pounds groot Flemish, and in Florentine florins, in quinquennial means, from 1351–55 to 1516–20.

Part I: England: values of English woollen cloths (24 yds by 1.75 yds): Those purchased for scholars and servants: at Cambridge and Winchester and those exported from London and Southampton and from all English ports, 1360–1520

Year Ending	Cambridge 1st quality in £ sterling	Cambridge 2nd quality in £ sterling	Winchester 1st quality in £ sterling	Exported London and Southampton in £ sterling	Mean Value in £ groot Flemish	Cloth Exports from all ports in £ sterling	Mean Value in £ groot Flemish	Mean in Florins (Florence)
1361–65	2.232	1.771	2.030					
1366–70	2.437	1.933	2.216					
1371–75	2.200	1.745	2.001	1.751	1.611	1.751	1.611	11.673
1376–80	2.430	1.928	2.210			2.314	2.240	15.427
1381–85	2.808	2.227	2.553	2.265	2.522	2.161	2.406	14.405
1386–90	2.140	1.698	1.946	1.887	1.979	1.857	1.974	11.966
1391–95	1.952	1.548	1.867			1.694	1.741	11.001
1396–1400	2.033	1.613	2.050			1.403	1.471	9.350
1401–05	2.128	1.812	2.080	2.618	2.745	1.769	1.855	11.791
1406–10	2.160	1.989	2.443			1.536	1.542	10.237
1411–15	2.136	2.178	2.464			1.501	1.193	9.003
1416–20	2.100	1.855	2.349			1.200	1.178	7.200
1421–25	2.113	1.875	2.314	2.402	2.505	2.402	2.505	14.412
1426–30	2.423	1.970	2.185	1.669	1.860	1.669	1.860	10.011
1431–35	2.468	1.985	2.240	2.299	2.638	2.299	2.638	13.456
1436–40	2.080	1.885	2.218	2.735	3.019	2.091	2.308	11.947
1441–45	2.273	1.905	2.360	2.194	2.422	2.180	2.406	11.625
1446–50	2.502	1.815	2.398	2.532	2.795	2.243	2.476	11.962
1451–55	2.380	1.893	2.400	2.228	2.460	1.614	1.782	8.608
1456–60	2.758	1.985	2.400	2.227	2.459	2.111	2.313	11.175
1461–65	2.933	1.875	2.400	2.113	2.333	1.856	2.041	9.860
1466–70	3.375	1.830	2.520	2.140	2.158	1.866	1.881	8.956
1471–75	2.520	2.230	2.520	2.048	2.177	1.877	2.002	9.011
1476–80	3.400	3.000	2.642	2.598	3.306	2.385	3.044	11.262
1481–85	3.400	2.560	2.663	2.799	4.295	2.274	3.435	10.498
1486–90	3.380	2.660	2.667	2.427	4.605	2.427	4.605	11.200
1491–95	3.630	2.586	2.667	2.822	3.684	2.822	3.684	12.898
1496–1500	3.493	2.514	2.765	2.271	3.332	2.271	3.332	10.002
1501–05	3.448	2.561	2.883	2.975	4.379	2.975	4.379	12.982
1506–10	3.408	2.570	3.060	3.502	5.155	3.502	5.155	15.283
1511–15	3.710	2.920	2.883	3.606	5.308	3.606	5.308	15.735
1516–20	4.120	3.060	3.024					

Sources: See the sources for Table 1.13, below

Table 1.12: Prices of English woollen broadcloths (24 yds by 1.75 yd) at Cambridge and Winchester Colleges in pounds sterling, a master mason's daily wage in pence (SE England), the value of the Phelps Brown & Hopkins 'basket of consumables' in pence, and the Consumer Price Index (1451–75=100), in quinquennial means, from 1361–65 to 1556–1560

Year	Cambridge 1st quality in £ sterling	Cambridge 2nd quality in £ sterling	Winchester 1st quality in £ sterling	Winchester 2nd quality in £ sterling	SE England Master Mason's Wage in d	Value of PBH Basket in d st	Price Index 1451–75 =100
1361–65	2.232	1.771	2.030	1.565	5.000	155.637	137.976
1366–70	2.437	1.933	2.216	1.708	5.000	153.928	136.460
1371–75	2.200	1.745	2.001	1.542	5.000	143.646	127.345
1376–80	2.430	1.928	2.210	1.704	5.000	123.958	109.891
1381–85	2.808	2.227	2.553	1.968	5.000	127.679	113.190
1386–90	2.140	1.698	1.946	1.500	5.000	114.191	101.233
1391–95	1.952	1.548	1.867	1.540	5.000	117.259	103.953
1396–1400	2.033	1.613	2.050	1.701	5.000	124.812	110.648
1401–05	2.128	1.812	2.080	1.728	5.100	127.073	112.653
1406–10	2.160	1.989	2.443	1.962	5.800	123.998	109.927
1411–15	2.136	2.178	2.464	1.900	6.000	122.119	108.261
1416–20	2.100	1.855	2.349	1.849	6.000	128.139	113.598
1421–25	2.113	1.875	2.314	1.714	6.000	117.020	103.740
1426–30	2.423	1.970	2.185	1.825	6.000	127.025	112.610
1431–35	2.468	1.985	2.240	1.789	6.000	123.090	109.122
1436–40	2.080	1.885	2.218	1.872	6.000	140.118	124.218
1441–45	2.273	1.905	2.360	1.912	6.000	104.424	92.574
1446–50	2.502	1.815	2.398	1.891	6.000	114.200	101.241
1451–55	2.380	1.893	2.400	1.830	6.000	114.774	101.750
1456–60	2.758	1.985	2.400	1.805	6.000	110.500	97.961
1461–65	2.933	1.875	2.400	1.800	6.000	114.489	101.497
1466–70	3.375	1.830	2.520	1.920	6.000	115.869	102.720
1471–75	2.520	2.230	2.520	1.900	6.000	108.370	96.072
1476–80	3.400	3.000	2.642	1.970	6.000	104.529	92.667
1481–85	3.400	2.560	2.663	2.000	6.000	136.921	121.383
1486–90	3.380	2.660	2.667	2.000	6.000	114.232	101.269
1491–95	3.630	2.586	2.667	2.000	6.000	115.671	102.545
1496–1500	3.493	2.514	2.765	2.000	6.000	111.152	98.538
1501–05	3.448	2.561	2.883	2.000	6.000	120.005	106.386
1506–10	3.408	2.570	3.060	2.000	6.000	118.499	105.052
1511–15	3.710	2.920	2.883	2.000	6.000	119.584	106.014
1516–20	4.120	3.060	3.024	2.000	6.000	139.678	123.827
1521–25	3.213	3.350	3.998	1.960	6.000	165.804	146.989
1526–30	4.448	4.120	4.461	1.854	6.000	180.336	159.872

Table 1.12 continued.

Year	Cambridge 1st quality in £ sterling	Cambridge 2nd quality in £ sterling	Winchester 1st quality in £ sterling	Winchester 2nd quality in £ sterling	SE England Master Mason's Wage in d	Value of PBH Basket in d st	Price Index 1451–75 =100
1531–35	3.245	2.584	5.100	1.993	6.000	183.709	162.862
1536–40	4.296	3.173	5.680	2.000	6.500	173.368	153.694
1541–45	5.799	3.250	6.320	2.000	6.900	202.607	179.615
1546–50	6.400	3.390	7.778	2.425	7.200	259.509	230.060
1551–55	7.210	3.240	8.211	2.542	8.400	306.956	272.123
1556–60	6.897	3.643	8.272	2.732	9.600	361.264	320.268

Sources: See the sources for Table 1.13, below

but then, in the later 15th and early 16th centuries, their relative value rose, reaching the equivalent of 162.63 days' wages in 1516–20 (Cambridge), and thereafter even more, with a maximum of 258.85 days' wages – *i.e.*, 1.23 year's money-wage income – in 1546–50 (but at Winchester). In part this 'rise' in the relative values of these woollens reflects the fall in the real wages of building craftsmen, when their wages failed to keep pace with the general rise in commodity prices, from the onset of the inflationary Price Revolution, from about 1515.

We should also consider the alternative value of these cloths: expressed as the number of commodity baskets having an equivalent value, in pounds sterling. We observe a general rise in their 'real values', from a mean of 3.011 baskets in 1361–65 to one of 5.424 baskets in 1441–45 (both Winchester woollens); while experiencing a brief decline in the mid 15th century, the 'real' values of these woollen then continued to climb, reaching 7.795 baskets (Cambridge) and 6.067 baskets (Winchester) in 1476–80. With subsequent declines and recoveries, these 'real values' for the Cambridge and Winchester woollen reached a 16th-century peak of 7.490 baskets (Winchester) and 6.854 baskets (Cambridge) in 1541–45, indicating that textile prices had risen more than had the value of the English 'basket of consumables'. At the end of this series, in 1556–60 (when inflation outpaced the rise in textile prices), the Winchester woollens were worth only 5.492 commodity baskets; and the Cambridge woollens, only 4.580 baskets.

Next, the corresponding Table 1.14 presents the prices and values of Flemish woollens, in quinquennial means, from 1351–55 to 1496–1500: for Ghent *dickedinnen* broadcloths (but up to 1546–50), and broadcloths manufactured in Ypres, Bruges and four of the so-called 'nouvelles draperies'. The latter were new and rival upstarts from the smaller Flemish towns of Wervik, Kortrijk, Nieuwkerk (Neuve-Eglise) and Niepkerk that had been challenging the supremacy of the older traditional *drie steden* (Ghent, Ypres, Bruges), from the later 14th century, by producing counterfeit imitation of their woollens, but nevertheless still genuine, heavy-weight fine broadcloths.[82] Table 1.15 presents the prices and relative values of fine woollens manufactured in the two chief textile towns of Brabant,

Table 1.13: Price and relative values of English woollen broadcloths (24 yds by 1.75 yd) at Cambridge and Winchester Colleges in pounds sterling, and their values expressed in terms of: the number of days' wages that master masons required to purchase one cloth, and the equivalent number of Phelps Brown and Hopkins 'baskets of consumables', in quinquennial means (arithmetic and harmonic), 1361–65 to 1556–60

Year	Cambridge 1st quality in £ sterling	Winchester 1st quality in £ sterling	Cambridge 1st Quality: No. Days Wages	Winchester 1st Quality: No. Days Wages	Value of Cambridge 1st Quality: in PBH Baskets	Value of Winchester 1st Quality: in PBH Baskets
1361–65	2.232	2.030	101.600	92.396	3.311	3.011
1366–70	2.437	2.216	113.554	103.266	3.660	3.328
1371–75	2.200	2.001	101.566	92.364	3.475	3.161
1376–80	2.430	2.210	115.769	105.281	4.701	4.275
1381–85	2.808	2.553	133.491	121.398	5.232	4.758
1386–90	2.140	1.946	101.565	92.364	4.458	4.054
1391–95	1.952	1.867	93.658	89.161	3.986	3.781
1396–1400	2.033	2.050	97.403	98.353	3.899	3.940
1401–05	2.128	2.080	100.149	97.892	4.018	3.924
1406–10	2.160	2.443	89.050	100.114	4.174	4.721
1411–15	2.136	2.464	85.384	97.783	4.193	4.802
1416–20	2.100	2.349	84.000	93.941	3.933	4.405
1421–25	2.113	2.314	84.499	92.553	4.333	4.746
1426–30	2.423	2.185	92.705	87.373	4.330	4.132
1431–35	2.468	2.240	97.878	89.579	4.770	4.365
1436–40	2.080	2.218	83.150	88.696	3.566	3.799
1441–45	2.273	2.360	89.012	94.389	5.092	5.424
1446–50	2.502	2.398	98.059	95.900	5.166	5.039
1451–55	2.380	2.400	93.873	96.000	4.905	5.019
1456–60	2.758	2.400	109.254	96.000	5.921	5.213
1461–65	2.933	2.400	112.166	96.000	5.872	5.031
1466–70	3.375	2.520	129.444	100.478	6.685	5.202
1471–75	2.520	2.520	100.414	100.645	5.536	5.556
1476–80	3.400	2.642	135.054	105.682	7.795	6.067
1481–85	3.400	2.663	127.273	106.519	5.688	4.668
1486–90	3.380	2.667	126.502	106.666	6.605	5.603
1491–95	3.630	2.667	136.537	106.667	7.102	5.533
1496–1500	3.493	2.765	132.033	110.095	7.135	5.944

Table 1.13 continued.

Year	Cambridge 1st quality in £ sterling	Winchester 1st quality in £ sterling	Cambridge 1st Quality: No. Days Wages	Winchester 1st Quality: No. Days Wages	Value of Cambridge 1st Quality: in PBH Baskets	Value of Winchester 1st Quality: in PBH Baskets
1501–05	3.448	2.883	132.730	114.756	6.626	5.753
1506–10	3.408	3.060	127.466	122.172	6.444	6.183
1511–15	3.710	2.883	147.253	114.812	7.433	5.771
1516–20	4.120	3.024	162.628	119.465	6.948	5.148
1521–25	3.213	3.998	124.224	157.297	4.483	5.671
1526–30	4.448	4.461	174.786	177.095	5.832	5.897
1531–35	3.245	5.100	120.992	202.794	3.913	6.609
1536–40	4.296	5.680	157.426	209.563	5.896	7.862
1541–45	5.799	6.320	200.508	219.408	6.854	7.490
1546–50	6.400	7.778	209.890	258.852	5.861	7.174
1551–55	7.210	8.211	204.683	234.565	5.609	6.425
1556–60	6.897	8.272	172.453	206.815	4.580	5.492

Sources:
London Cloth Export Prices: National Archives (Public Record Office of London), King's Remembrancer Exchequer, Particulars Accounts: Customs E.122/76/13, 74/11, 77/11, 73/23, 73/25, 194/14–18, 78/7, 79/5, 81–1–2; Lord Treasurer's Remembrancer, Enrolled Customs, E.356/19–24
Southampton Cloth Export Prices: National Archives (P.R.O.), K.R. Exchequer, Customs E.122/139/4/ 139/7–8, 141/4, 141/21–22, 209/1, 141/25, 140/62, 141.29, 141/31, 141/33, 141/35–36, 209/8, 141/38, 142/1, 142/3, 142/8, 142/10, 143/1, 142/11–12, 209/2, and L.T.R. Enrolled Customs E. 356/19–24.
Cambridge and Winchester cloth prices: Archives of the British Library of Political and Economic Science (London), Phelps Brown Papers Collection, Box Ia.324; Thorold Rogers 1866; 1882; Beveridge 1939.
Wages for master masons in south-eastern England: Phelps Brown and Hopkins 1955, reprinted in Phelps Brown and Hopkins 1981, 1– 12.

Table 1.14: The Flemish Composite Price Index (1451–75=100) and the values of Flemish woollen broadcloths produced in Ghent, Ypres, Bruges, Wervik, Kortrijk, and Nieuwkerk, in Flemish pounds groot: in quinquennial means, 1351–55 to 1546–50

Part II: Flanders

Years	Flanders	Ghent	Ypres	Bruges	Bruges	Werkik	Kortrijk	Nieuwkerk
	Composite Price Index Basket of Consumables 1451–75 =100 126.295 d. groot Flemish	1st Quality Dickedinnen Broadcloths in £ groot Flemish	Fine Dyed Woollens for Magistrates Broadcloths in £ groot Flemish	Fine Dyed Woollens May in £ groot Flemish	Fine Dyed Woollens October in £ groot Flemish	1st Quality woollens in £ groot Flemish	1st Quality woollens in £ groot Flemish	Niepkerk 1st Quality woollens in £ groot Flemish
1351–55	60.646	3.749						
1356–60	87.540	4.330						
1361–65	94.425	4.857						
1366–70	107.401	5.377						
1371–75	115.222	5.333						
1376–80	111.662	6.890						
1381–85	119.193	7.500						
1386–90	124.719	5.958						
1391–95	88.510	5.538		8.143	5.538	3.591	3.600	
1396–00	89.796	5.759		8.143	5.466	3.756	3.343	
1401–05	88.531	5.980		8.341	6.239	3.512	3.251	
1406–10	105.261	5.843	5.435	7.264	6.088	3.742	3.462	
1411–15	95.309	5.853	5.280	6.585	5.585	3.460	3.403	
1416–20	107.381	6.077	5.303	6.800	4.969	3.131	3.523	
1421–25	112.182	5.997	5.200	7.100	4.940	3.194	3.500	
1426–30	117.773	6.047	5.110	6.915	5.416	3.800	3.900	1.974
1431–35	123.512	7.061	6.000	6.775	6.478	4.197	4.200	2.201
1436–40	140.166	7.182	6.528	7.319	7.149	4.198	3.725	2.079
1441–45	113.504	8.008	6.658	7.775	7.057	3.878	4.215	2.243
1446–50	109.984	7.719	7.408	7.881	6.860	3.875	3.942	2.227
1451–55	100.902	6.828	7.197	7.655	7.390	3.672	3.977	2.310
1456–60	117.855	7.857	7.768	7.951	7.418	3.444		1.878
1461–65	88.705	8.000	7.886	8.032	6.994	3.889		2.291

Years	Flanders	Ghent	Ypres	Bruges	Bruges	Werkik	Kortrijk	Nieuwkerk
	Composite Price Index Basket of Consumables 1451–75 =100 126.295 d. groot Flemish	1st Quality Dickedinnen Broadcloths in £ groot Flemish	Fine Dyed Woollens for Magistrates Broadcloths in £ groot Flemish	Fine Dyed Woollens May in £ groot Flemish	Fine Dyed Woollens October in £ groot Flemish	1st Quality woollens in £ groot Flemish	1st Quality woollens in £ groot Flemish	Niepkerk 1st Quality woollens in £ groot Flemish
1466–70	96.520	8.188	7.608	8.811	6.567			2.009
1471–75	96.017	8.690	7.553	9.937	6.574			
1476–80	117.213	9.063	7.742	8.604	7.664			
1481–85	156.853	10.998	10.715	11.552	8.986			
1486–90	184.511	16.914	11.287	17.023	14.268			
1491–95	144.981	14.367	13.710	9.558	9.937			
1496–00	100.255	14.667	12.252	10.560	9.900			
1501–05		14.667						
1506–10		14.130						
1511–15		13.000						
1516–20		13.130						
1521–25		13.225						
1526–30		13.595						
1531–35		13.775						
1536–40		13.95						
1541–45		13.820						
1546–50		16.900						

Sources:
Flemish Commodity Price Index: see sources for Tables 1.4–1.5
Ghent Cloth Prices: Stadsarchief Gent, Stadsrekeningen, Reeks 400: vols. 11–44; Algemeen Rijksarchief België, Rekenkamer, reg. nos. reg. nos. 38,635–72.
Bruges Cloth Prices: Stadsarchief Brugge, Stadsrekeningen 1390–91 to 1499–1500; Algemeen Rijksarchief België, Rekenkamer,nos. 32,461–564 (stadsrekeningen Brugge, from 1406);
Ypres Cloth Prices: Algemeen Rijksarchief België, Rekenkamer, registers nos. 38,635–722 (stadsrekeningen Ieper)
Cloth Prices for Wervik, Kortrij, Nieuwkerk, Niepkerke: see the sources for the Bruges cloth prices: prices recorded on the Bruges market.

Table 1.15: Prices, in Flemish pounds groot, of Brabantine dyed woollens manufactured in Leuven and Mechelen, the number of days wages for an Antwerp master mason to buy a Mechelen zwartlaken, and the Brabant Commodity Price Index (1451–75=100), in quinquennial means, 1366–70 to 1546–50

Part III: Brabant

Years	Leuven Dyed Price in £ groot Flemish	Mechelen Dyed Woollens Mean Price in £ groot Flemish	Mechelen Dyed Zwart roos-lakens Mean Price in £ groot Flemish	Mechelen Zwartlaken harmonic mean No. of days Wages for Antwerp Master Mason to buy one	Brabant Commodity Price Index 1451–75=100 155.016d groot Flemish
1366–70		5.375			
1371–75		6.716			
1376–80		7.211			
1381–85		7.957			
1386–90		8.780			
1391–95		6.524			
1396–00		5.972			
1401–05	3.226	8.631			96.403
1406–10	3.683	9.418			102.828
1411–15	3.787	9.694			100.559
1416–20	3.944	8.411			105.868
1421–25	4.520	7.618			108.433
1426–30	5.057	8.631			115.651
1431–35	6.086	8.528			113.003
1436–40		6.523			125.432
1441–45	4.067	6.706			105.477
1446–50	4.082	6.538			99.577
1451–55	3.788	6.703			98.545
1456–60	4.086				114.577
1461–65	5.412				91.070
1466–70	5.698	5.624			96.953
1471–75	5.517	6.129	6.930	140.522	98.854
1476–80	5.955	7.826	8.053	171.450	120.693
1481–85	6.531	7.475	6.893	136.157	155.752
1486–90	7.682	6.205	6.876	127.495	174.098
1491–95	7.907	8.478	8.524	178.007	133.216
1496–00		9.821	9.604	199.557	115.352
1501–05		10.012	9.919	204.716	125.449
1506–10		10.116	10.119	208.788	114.801
1511–15		10.941	10.954	204.030	137.904
1516–20		11.310	11.348	196.131	150.264
1521–25		10.976	11.159	187.998	179.938
1526–30		10.807	11.067	181.607	178.519
1531–35		11.025	11.165	191.028	173.995
1536–40		11.295	11.373	164.074	185.641
1541–45		11.109	11.107	136.384	208.340
1546–50		12.202	11.996	128.952	199.420

again in quinquennial means, from 1351–55 to 1546–50: those of Leuven and Mechelen (again, but now commencing in 1366–70, and with a wider variety of broadcloths in the quinquennial mean price). Finally, Table 1.16 provides a direct comparison of the prices and relative values of first quality woollen broadcloths in both Ghent (*dickedinnen*) and Bruges: *i.e.*, in terms of both the number of days' wage that a master mason needed to acquire one of these cloths, and the value of the various woollens expressed as the number of commodity baskets that each cloth was worth.

TABLE 1.17: POLISH MARKETS FOR EUROPEAN WOOLLEN TEXTILES IN THE EARLY 15TH CENTURY

The final table, Table 1.17, provides a snapshot of European woollen cloth prices, for broadcloths of Italy, Flanders, Brabant, Holland and England, as sold in Polish markets in the very early 15th century. The prices are presented in Polish *groszes* per ell, in Flemish pounds *groot*, English pounds sterling, and Florentine gold florins.

CONCLUSIONS (I): PROBLEMS IN MEASURING THE 'REAL' VALUES OF TEXTILES

If the statistical evidence presented in these 17 tables may seem somewhat overwhelming, they do provide a convincing demonstration of the range of woollen textile values, and the true meaning of luxury, indeed ultra-luxury, consumption, over three centuries of European history: the 14th to 16th.

A major contribution of this essay has been the provision of three new methods of estimating and representing 'real' values of these various cheap and costly textiles over the three centuries being surveyed. All of them, as I have contended, vastly preferable to the standard and traditional method of using so-called 'silver equivalents'. The first two are related, in that both involve, directly and indirectly, consumer price indexes: those for England, Flanders, and Brabant. For each of the textiles concerned, I calculated a 'real' price index with the same 25–year base used for the 'consumer baskets' (1451–75=100). Hence, as stressed earlier, if the particular cloth price index (*e.g.*, for the Ghent *dickedinnen*) rose more than did the consumer price index, then we may conclude that its 'real' value had also risen. The second new method was the computation of the specific number of such 'baskets of consumables' whose aggregate money-of-account value equalled the market value of the textile concerned. Thus, again, if the number of such baskets worth one unit

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Sources for Table 1.15:
Mechelen Cloth Prices: Stadsarchief Mechelen, Stadsrekeningen, 1316–1550, Series I: nos. 3–225; Algemeen Rijksarchief, Rekenkamer, reg. nos. 41,219–85;
Leuven Cloth Prices: Stadsarchief Leuven, Stadsrekeningen, 1345–1500, nos. 4986–5124.
Brabant Commodity Prices: Van der Wee 1975.
Antwerp Wages: Van der Wee 1963, Vol. I: Statistics, Appendix II: Wages, 457–460.

Table 1.16: Prices and relative values of luxury-quality woollen broadcloths in Bruges and Ghent in pounds groot Flemish, and in relation to the values of the Flemish commodity baskets and the purchasing power of a master mason's daily wage in quinquennial means, 1331–1335 to 1566–1570

Years	BRUGES	BRUGES	BRUGES	GHENT	GHENT	GHENT	GHENT	GHENT
	Dyed broad-cloths in mean value in £ groot	Dyed Woollens in Flemish Commodity Baskets	No. of Days' Wages for a Master Mason to buy one cloth	Dyed broadcloths in mean value in £ groot	Dyed Woollens in Flemish Commodity Baskets	Dyed Woollens in Brabant Commodity Baskets	No. of Days' Wages for a Bruges Master Mason to buy one cloth	No. of Days' Wages for an Antwerp Master Mason to buy one cloth
1331–35	1.417			2.747				
1336–40	1.690			2.788				
1341–45	1.733			3.512				
1346–50	2.274	8.544	109.133	2.874	10.856		131.885	
1351–55	3.496	10.525	154.970	3.749	11.632		171.457	
1356–60	3.757	7.321	144.418	4.330	9.366		171.811	
1361–65	4.194	9.184	152.610	4.857	9.752		169.459	
1366–70	4.678	8.137	136.456	5.377	9.483		160.559	
1371–75	6.804	10.527	201.022	5.333	8.808		159.725	
1376–80	7.226	12.869	173.321	6.890	11.522		186.733	
1381–85	7.004	10.638	188.442	7.500	11.957		204.545	
1386–90	7.662	11.358	168.039	7.192	10.840		158.835	
1391–95	6.280	13.313	165.136	5.538	11.890		147.680	
1396–1400	6.353	13.260	152.614	5.759	12.187		140.319	
1401–05	6.245	13.383	149.766	5.856	12.496	9.642	139.732	192.063
1406–10	5.755	10.173	136.895	5.843	10.470	8.785	139.902	186.989
1411–15	5.474	10.900	130.932	5.853	11.670	9.008	140.431	206.020
1416–20	5.417	9.352	128.612	6.077	10.737	8.867	145.620	221.421
1421–25	5.459	9.058	127.591	5.997	10.162	8.562	143.910	239.385
1426–30	5.653	9.025	134.726	6.047	9.760	8.091	145.085	251.180
1431–35	6.474	9.965	143.786	7.061	10.869	9.673	156.874	264.981
1436–40	7.135	9.762	154.920	7.182	9.782	8.853	156.377	271.603
1441–45	7.301	12.179	159.035	8.008	13.330	11.706	174.258	266.947
1446–50	6.859	11.827	149.149	7.719	13.313	12.011	168.268	246.793
1451–55	6.818	12.760	147.930	6.828	12.720	10.647	147.761	216.716
1456–60	6.480	10.455	141.024	7.857	12.649	10.585	171.175	251.057

Years	BRUGES Dyed broadcloths in mean value in £ groot	BRUGES Dyed Woollens in Flemish Commodity Baskets	BRUGES No. of Days' Wages for a Master Mason to buy one cloth	GHENT Dyed broadcloths in mean value in £ groot	GHENT Dyed Woollens in Flemish Commodity Baskets	GHENT Dyed Woollens in Brabant Commodity Baskets	GHENT No. of Days' Wages for a Bruges Master Mason to buy one cloth	GHENT No. of Days' Wages for an Antwerp Master Mason to buy one cloth
1461–65	6.833	14.651	148.825	8.000	17.138	13.600	174.545	256.000
1466–70	6.958	13.656	151.310	8.188	16.105	13.076	178.562	261.890
1471–75	7.495	14.766	162.567	8.690	17.188	13.605	189.568	278.034
1476–80	7.142	11.629	155.141	9.063	14.707	11.642	197.580	289.784
1481–85	8.479	10.016	182.580	10.998	12.968	10.628	237.068	347.700
1486–90	14.363	14.793		16.914	17.202	14.366		479.198
1491–95	8.528	11.067		14.367	18.721	16.626		459.576
1496–1500				14.667	27.801	19.686		457.153
1501–05				14.667		18.101		454.204
1506–10				14.130		19.060		436.505
1511–15				13.000		14.595		362.791
1516–20				13.130		13.527		340.660
1521–25				13.225		11.377		334.173
1526–30				13.595		11.791		334.571
1531–35				13.775		12.252		353.629
1536–40				13.950		11.523		297.893
1541–45				13.820		10.267		255.453
1546–50				16.900		13.140		272.778
1551–55				20.300		12.014		323.077
1556–60				20.933		10.770		310.073
1561–65				26.050		12.846		231.869
1566–70				28.000		13.620		308.966

Sources: See sources for Tables 3–8 above

of the textile concerned rose, then we may similarly conclude that its real value had risen proportionately. This technique is especially valuable for any prices series in which data are missing for any years in the base period. The third, and seemingly related technique employed in this study, was to estimate the number of days' wages that a master building craftsman – a mason (brick or stone) or a carpenter, usually paid the same – would have had to spend in order to acquire one unit of the textiles concerned.

Table 1.17: Prices for Italian, English, Flemish, Brabantine, Dutch, and French textiles in Poland (Cracow), c. 1400–1410. Prices for woollens of 35 Flemish ells (24.5 m in length)

Place/Town of Textile Producer	Textile Type or Name	Polish Groszes per ell (0.70 m)	Value in £ groot Flemish 34d/florin	Value in Florentine Florins	Value in £ sterling 36d/florin
ITALY					
Florence	dyed woollen broadcloths	20	4.132	29.170	4.376
Florence	dyed woollen broadcloths	22	4.545	32.080	4.812
FLANDERS					
Bruges	dyed woollen broadcloths	30	6.198	43.750	6.563
Dendermonde	dyed woollen broadcloths	15	3.098	21.870	3.281
Kortrijk	dyed woollen broadcloths	12	2.479	17.500	2.625
Geraardsbergen	dyed woollen broadcloths	12	2.479	17.500	2.625
BRABANT					
Brussels	dyed woollen broadcloths	20	4.132	29.170	4.376
Brussels	dyed woollen broadcloths	32	6.612	46.670	7.001
Mechelen	dyed woollen broadcloths	17	3.512	24.790	3.719
Leuven	dyed woollen broadcloths	16	3.305	23.330	3.499
Lier	dyed woollen broadcloths	24	4.958	35.000	5.250
Lier	dyed woollen broadcloths	18	3.719	26.250	3.938
Tienen	dyed woollen broadcloths	14	2.893	20.420	3.063
Tienen	small cloths	9	1.859	13.120	1.968
Herentals	dyed woollen broadcloths	18	3.719	26.250	3.938
HOLLAND					
Leiden ?	Ostrodommensis	15	3.098	21.870	3.281
ARTOIS					
Arras	Sayes	3	0.619	4.370	0.656
Enghien	unspecified	8	1.653	11.670	1.751
ENGLAND					
London	dyed woollen broadcloths	12	2.479	17.500	2.625
London	dyed woollen broadcloths	24	4.958	35.000	5.250
unspecified	dyed woollen broadcloths	14	2.893	20.420	3.063

Source: Wyrozumski 1983.

In the short run – as for example, in the years 1535 to 1544, in Table 1.2 – all these methods seemed to provide equivalent results for real values. But Table 1.2 represents only a very short term snapshot. If we compare such textile values a century apart, we find instead a lack of congruity, and thus a measure of statistical indeterminancy. The prices in Flemish pounds *groot*, for absolutely identical Ghent *dickedinnen* broadcloths, were earlier shown to be as follows: in 1441–45, a quinquennial mean value of £8.008 *groot*; and in 1535–44, a quinquennial mean value of £13.657 (see Table 1.3–1.6). Are the price differences purely the result of the intervening inflations over this century, or are there in fact any 'real' differences? That depends on how the measure was chosen. For in 1441–45, the mean value of such a *dickedinnen* was 13.330 Flemish commodity baskets, but in 1535–44, it was significantly less – 10.685 baskets (though in commodity baskets of Brabant). However, if the measure is the purchasing power of wages, we find that in 1441–45, a master mason (Bruges) would have had to spend 174.26 days' wages to purchase one such *dickedinnen* broadcloth; but, in 1535–44, an Antwerp mason would have had to spend much more (53 percent more) for the same purchase – 265.95 days' wages.[83] These rather stark differences represent the very sharp fall in 'real' industrial wages over this century (and perhaps regional differences as well), on the one hand, but also a relative decline in the value of Ghent *dickedinnen* woollens in relation to other consumer commodity prices by the 1540s, when the Price Revolution was well under way, with steeply rising food prices in particular.[84]

CONCLUSIONS (II): CHANGES IN REAL INCOMES, TEXTILE VALUES, AND CONSUMER EXPENDITURES SINCE THE 16TH CENTURY

Finally, however, and despite such caveats, let us compare the purchasing power of building craftsmen in the period for Table 1.2, 1535–1544, with that of a modern-day building craftsmen in Toronto (Canada), for textiles. As was indicated in the earlier analysis of this Table 1.2, the average number of days' wages required to purchase a quantity of cloth sufficient for a full suit of clothing (for that era), namely 12 m^2, would have been as follows: 13.725 days' wages for a Hondschoote single say, and 6.7 times as many days, 91.413 days' wages for a Ghent *dickedinnen*.[85]

A contrast with the purchasing power of the current-day modern building craftsmen is very striking. Thus, in August 2008, a journeyman carpenter in Toronto earned a minimum of $33.07 per hour; and thus, with a standard working day of 8 hours (vs. 12 hours in the 16th century), he would receive a daily wage income of $264.56 (= €165.35). For the 91.413 days required for a master mason's purchase of 12 m^2 of the aforesaid Ghent *dickedinnen* in 1538–44, he would earn $24,184 (about €15,115). For the 13.725 days' wages required for that mason's purchase of the supposedly 'cheap' Hondschoote single say (1538–44), the same Toronto carpenter would have also earned a very considerable sum: $3,631(or about €2,269). Instead, today's Toronto carpenter would need to spend only a very few days' wage income to purchase a very fine wool-based suit.[86]

One might cavil, however, that such an expenditure would be in after-tax income; and

that this comparison does not fairly take into account differences in taxation between the 16th and 21st centuries. But if the 16th-century Low Countries' had no income taxes, this region had very oppressive consumption (excise) taxes, which posed particularly a great burden for most industrial wage-earners.[87]

What, therefore, is the final lesson to be learned from this study on the relative values of textiles and of the purchasing power of a building craftsmen's labour, during the later-medieval and early-modern eras? Clearly, this striking evidence demonstrates the enormous gains in real incomes and living standards from the 16th to the early 21st centuries. Such gains are indisputably the product of general European and North American economic growth: a growth in Total Factor Productivity (land, labour, and capital), which in turn is fundamentally the consequence of modern industrialization, so often maligned in the historical literature. Let us remember in particular that the very core of the British Industrial Revolution, from the 1770s, and then of subsequent industrialization in Europe and Asia, was first water-powered and then steam-powered mechanization of textile manufacturing, within a new factory system of production. In the case of the cotton industry, such technological changes reduced costs and then consumer prices on the order of 90 percent.[88] In perspective, we should also realize that productivity in the woollen cloth industry had remained virtually unchanged from the 14th to the late 18th centuries. On average the production and finishing of a standard broadcloth had taken about three weeks, or more; and most drapers or clothiers were able to produce only about 20 such cloths a year, both in England and the Low Countries.[89]

But, for the more general consideration of living standards for the working and lower classes, we must understand that the major improvements took place, not so much from the commencement of the British Industrial Revolution itself, but rather from a full century later, from the 1870s, and most especially from after World War II. Who can really doubt the benefits of modern economic growth when we realize that, in England, for example, the crude death rate fell from 30/1000 in the 1540s to just 10/1000 today (7/1000 in Canada), and that life-expectancy (from birth) in England has risen, and well more than doubled, from 34 years in the 1540s, to 79 today (80 in Canada).[90]

Equally dramatic are the differences in consumer expenditure shares between the 15th century (i.e, for the base period of 1451–75) and today. For their English 'basket of consumables' price index, Phelps Brown and Hopkins allocated a full 80 percent to food and drink. I allocated virtually the same, 79.99 percent, for food and drink in my Flemish price index, while Van der Wee allocated somewhat less, 74.19 percent for his Brabant price index.[91] That was not any casual estimate, but one closely based on examinations of household consumer patterns for wage-earners from the mid-15th to the late 18th century; and the same was true for Van der Wee's 'basket of consumables' price index for Brabant (Antwerp-Lier-Brussels region).[92] In modern-day Canada (August 2008), the current Consumer Price Index share for food and drink combined is only 20.11 percent (17.04 percent for food, and 3.07 percent for alcoholic beverages and tobacco).[93] Consider as well the striking differences in the shares allocated for clothing: in the Phelps Brown and Hopkins index for England, it is 12.50 percent; in Van der Wee's index for Brabant, it is somewhat higher, at 18.00 percent; but in modern-day Canada, it is only 5.36 percent (for both clothing and footwear).

Of the three basic necessities considered here, the only uncertainty lies in the category

of 'shelter', for which the current Canadian share in the Consumer Price Index is 26.62 percent (plus 11.10 percent for 'household operations and furnishings'). For in neither the Phelps Brown and Hopkins index nor the Van der Wee index was there sufficient data for estimating expenditure shares for housing, but only for domestic fuels and light: a 7.50 percent share in the Phelps Brown and Hopkins index, and a 7.31 percent share in the Van der Wee index.[94]

In conclusion, modern industrialization and economic growth have permitted European and North American societies to reduce drastically their consumer expenditure shares on at least two of the three 'necessities', food and clothing – though again the distinction between genuine necessities and luxuries, past and present, is always difficult to define with any precision. Nevertheless, that reduction in turn has clearly permitted modern European and North American societies to devote considerably greater consumer expenditures or household budget shares to a much larger and vaster array of consumer goods, including especially those for housing, many of which historians would consider to be 'luxuries'. Needless to say, the overwhelming majority of these consumer goods would have been totally inconceivable to our 19th-century ancestors, let alone those of the 15th and 16th centuries.

Whether or not human happiness has progressed to the same degree, since the 15th century, is a question best left to moral philosophers. Yet it would be difficult for any to dispute that living far longer, with far healthier lives, is a very distinct advantage over the past, when, to quote the English philosopher Thomas Hobbes (1588–1679), life for so very many was then 'solitary, poor, nasty, brutish and short'.[95] And, presumably the vast number of the poor were not very well dressed either, certainly not compared to their aristocratic 'superiors'.

Notes

1. If today, beer and wine may be considered luxuries, justifiably subjected to 'sin taxes', they were necessities in pre-modern times, because of the inherent dangers in drinking contaminated water and milk. On this point (beer and wine), see Munro 2008b, 995–998. For consumption of food and drink: see also Van Uytven 2001; 2003; 2007; Unger 1998; 2001.
2. See, the following studies on sumptuary legislation: Hunt 1996; Kovesi 2002; Muzzarelli 2002; Arce and Damián 1998. See also the related studies on luxury textile consumption and fashion: Taylor 1983; 2002; Piponnier and Mane 1997; Thirsk 1973; Van Uytven 1983; Munro 1983a, reprinted in Munro 1994a; Munro 1998; Munro 2007a.
3. The sources for all these price and wage data are given in the tables in the Appendix. For comparative textile prices, including those in the Mediterranean and Poland, see nn. 18, 20.
4. See my publications cited below in n. 7; but also Chorley 1987; 1988; Childs 1996.
5. See North 1985; North and Thomas 1973, 71–96, 134–38; North 1981, chapters 1–5; 1984; Reed 1973, 180–186. Many aspects of North's 'transaction costs' model can be found earlier in: Lane 1941, subsequently revised as Lane 1942; Lane 1950; and Lane 1959, 401–417. All have been republished in Lane 1966.
6. Certainly the most luxurious and most costly of all textiles worn in later-medieval and early-modern Europe were those woven from silk; but we cannot include silk-based textiles in these comparisons for two reasons: first, they came in such a wide variety of fabrics (damasks, satins, velours, *etc.*), which, in turn lacked any real consistency in dimensions; and second, we do not posses a consecutive series of market prices, as we do for woollens. For the late-medieval silk industry, see Munro 1988b; Federico 2003; Mola 2000a; 2000b; Lanaro 2006; Caviacocchi 1993.
7. For evidence, see my prior publications, in particular: Munro 1990; 1991a; 1994b; 1994c; 1995; 1997; 1999a; 1999b; 1999c; 2001; 2003c. For Italy in particular, see also Munro 2007c.
8. See the sources cited in n. 7, in particular, Munro 2003b; and see also Ormrod 1991.
9. See the sources cited in my publications in n. 7 above.
10. For the evidence: see Van der Wee 1963; Van der Wee and Peeters 1970; Van der Wee 1990; Van der Wee and Materné 1993; Edler 1936; 1936–37; Endrei 1974; Brulez 1959a; 1962; 1968, republished Brulez 1970; Brulez 1959b; Munro 2001.
11. See the publications cited in nn. 7 and 10, above.
12. See sources cited in n. 7 above; and also: Coornaert 1930a; 1930b; 1950; Craeybeckx 1976. In the 1560s, the production of woollen cloths from the *nouvelles draperies* and the very few remaining traditional draperies in the southern Low Countries was then about 2.07 million metres, while output from the various *sayetteries* and other *draperies légères* (*sèches*) was 3.64 million metres, *i.e.*, about 76 percent greater. See Soly and Thijs 1977–1979. See also Stabel 2004; Van der Wee 2003.
13. See the sources cited above in n. 7 above.
14. See the sources cited above in nn. 7 and 10 above.
15. The Flemish textile term *dickedinnen* literally means 'thick and thin'. It probably refers to the twilled weave with an alternation of two wefts and then one weft over the warp yarns, giving a slightly ribbed effect. See De Poerck 1951. Such woollens were also manufactured at Bruges, Ypres, and Mechelen. The term *Rooslaken* literally means 'rose cloth'; but most were black. See Tables 1.2 and 1.10.
16. For one example, and perhaps the only published one, see Munro 1997, Table 7; and see also 'Appendix on Says', pp. 87–93. For prices for roughly comparable English worsteds in the in the mid-15th century, see Munro 1977, Table 13.3, esp. p. 258.
17. Stadsarchief Gent, Stadsrekeningen 1314/15–1569/70, Reeks 400, nos. 1–77; Stadsarchief Mechelen, Stadsrekeningen 1315–1550, Series I, nos. 3–225 (1315–1550); Algemeen Rijksarchief, Rekenkamer, registers nos. 41,205–41, 285. The other exception is for cloth prices in Leiden (Holland), whose town accounts provide prices from 1391, but regularly only from 1460 to 1570: Gemeente Archief Leiden, Archief der Secretarie van de Stad Leiden, 1253–1575, nos. 511–640 (for cloth prices from 1391–1570). I have not yet had the time and resources, however, to tabulate these data on a spreadsheet.

18. For the evidence on relative prices, from a wide variety of late-medieval draperies, see Munro 2007a, especially Tables 4.1, Table 4.3, Table 4.4, Table 4.5; Munro 1983a, esp. Table 3.6, Table 3.7, Table 3.8, Table 3.11, Table 2.14; Munro 1977, Table 13.3, Table 13.5; Munro 1997, Tables 1–2; Munro 2003c, Table 5.10. For the forms, nature, and technology of medieval northern broadcloths, see Munro 2003b.
19. See Munro 2007a, esp. n. 49.
20. See the sources cited above in n. 6. For prices of some silk fabrics in 15th century England, see Munro 1983a, Table 3.15; and Munro 1977, Table 13.3.
21. For the following, see Munro 1988c, reprinted in Munro 1994a; 2003b; Chorley 1997.
22. See Munro 1978; 1979, both reprinted in Munro 1994a. See also Munro 1988c; 2003b. By the 16th century, however, Spain was producing and exporting varieties of *merino* wools, which had evolved, from their mid 14th century origins, to rival the better English wools in quality. By the 17th century the even better *merinos* had surpassed the best English wools in quality (and now also in price). Indeed, the finest wools in the world today are those produced by sheep that are the descendants of the Spanish *merinos*, especially in Australia and New Zealand. See Munro 2005b.
23. Fuller's earth, a clay-like substance, is more properly known as *floridin*, whose chief hydrous aluminum silicate was usually kaolinite ($Al_2O_3Si_2O_4.2H_20$). These scouring agents also made the wools more receptive to the dye-fixing mordant, usually alum, when the cloth was subsequently dyed in the piece. See my publications cited in nn. 4, 7, 21–22, and n. 26 below.
24. See sources in nn. 7, 21–22, and 26: especially Munro 1994b.
25. In 1458, the Bruges fullers' ordinance for *bellaert* woollens stipulated that the overall shrinkage from this compression and felting, which gave the cloth its required strength and durability, had to be at least 56 percent (from 172 to 75 square ells): in length, from 43 to 30 ells (30 metres to 21 metres); and in width, from 4.0 to 2.5 ells (2.8 metres to 1.75 metres). See Delepierre and Willems 1842. The better known Ghent *dickedinnen*-broadcloths of the 15th and 16th centuries (1456, 1462, 1546) underwent a very similar shrinkage of 54 percent (from 75.49m² to 34.91m²). Boone 1988; Lameere and Simont 1910. In both, and indeed in all such woollens, the width underwent greater shrinkage than the length (37.5 vs 30.2 percent), because the warps were more tightly spun than the wefts.
26. Water-powered fulling mills were first introduced into England in 1173. In the 15th century, water-powered gig-mills, designed to displace teasels in raising the nap on woollen cloth, were added to some English fulling mills, but never became widespread before the 19th century. For water-power and the following, see Malanima 1986; Carus-Wilson 1941, reprinted in Carus-Wilson 1954, 183–211; Munro 2003f and my other publications cited in nn. 7, 21–22, above, esp. Munro 1988c; 2003b; 1994b.
27. See the sources cited in n. 26, for a comparison of water-powered mechanical fulling in Florence with foot-fulling in Leiden (1438); and also Lipson 1921, Appendix I: with an estimate on cloth manufacturing costs, from Hale 1683, 23: a table indicating that fulling (milling) and burling cost 12s 0d, or 8.28 percent of the total manufacturing cost of £7 5s 0d (including the wool, costing £4 10s 0d: 5.24 percent of a total cost of £11 15s 0d). A Parliamentary report of 1840 stated that in the years 1781–1796, mechanical fulling (scouring, burling, felting) accounted for 6.45 percent of total manufacturing costs, excluding the cost of wool (11s 6d in a total of £8 18s 3d). *Ibid*, Appendix II, p. 258. See n. 89 below.
28. See the sources cited in n. 26 above.
29. See nn. 7, 21–22, 26 above.
30. For another example: In the Ypres drapery, the fine Cotswold wool used in producing a black woollen broadcloth in 1500 accounted for 64.2 percent of pre-finishing manufacturing costs and for 52.0 percent of total costs (and indeed the price for Cotswolds wool at Calais corresponds to the costs in the Ypres accounts for 1500, when one adds on transport and marketing costs). In the other manufacturing costs, the finishing process of dyeing and dressing again accounted for 19.2 percent of total costs (17.7 percent in dyes and 1.5 percent in shearing costs); but this time somewhat more extensive and skilful labour in spinning, weaving, fulling, and tentering accounted for 26.2 percent of total production costs. For the data sources, see Munro 1977, Table 13.2; and Munro 1983a, Table 3.12.
31. See Coornaert 1930a; 1950.

32. See Van der Wee 2003; Munro 1997; Noordegraaf 1997; Holderness 1997; Martin 1997; Pilgrim 1959–60; Priestley 1985; 1990; 1991.
33. In 1640, when wool-based textiles still accounted for almost all of English exports – 92.3 percent by value – the woollens of the Old Draperies still exceeded the value of the products of the New Draperies (bays, says, serges, perpetuanas, *etc.*), but not by much: 48.9 percent for the former vs. 43.3 percent, for the latter. See Clay 1984, Table XIII.
34. Mann 1971, Appendix I: Table B (total value of £2,818,871, excluding hosiery). See also Clay 1984, Table XV, with slightly different figures, total textile exports worth £3,045,196, as the average of exports in 1699–1701: 41.15 percent in products of the Old Draperies; 51.96 percent in products of the New Draperies, and 5.89 percent Miscellaneous (stockings, hats, others); Van der Wee 2003, Table 8.6.
35. For the importance of England's 'Spanish medley' broadcloths in Mediterranean trade in the 17th century, see Davis 1961; Munro 2007b; 2007c. See also nn. 37–38 below.
36. Ponting 1971, 122.
37. For various studies on the decline of the English/British broadcloth industry, see Mann 1971, 205–222 ('.. Beginnings of the Final Decline'); Ponting 1971, 122–132; Heaton 1965; Urdank 1985; Jenkins and Ponting 1982, 229–304; Jenkins 2003a; 2003b.
38. Jenkins 2003, 1021–1022, and Table 29.4. Today, Italy is the world's leading manufacturer of wool-based textiles.
39. See Munro 2005b.
40. For coinage debasements, monetary policies, and monetary problems, see: Munro 2008c, 197, 11–41 ('Late Medieval Monetary Policies'), 65–179; Munro 1983b, reprinted in Munro 1992; Munro 1984a; 1984b; 1988a; 1991b; 2000; 2002; 2003a; 2003e; 2004. See also, Spufford 1970, 152–163; 1986, xix–lxiv; 1988.
41. See sources in n. 40, and also Van der Wee 1963, Vol. I, Tables 4:XIII–XV.
42. The new Elizabethan silver penny, minted from 1560, contained 0.480 g fine silver, only 75.11 percent of that contained in Henry VIII's silver penny of 1526. See Challis 1967; 1989; 1992, 228–266; Gould 1970; Feavearyear 1963, 46–75; 76–98.
43. See Munro 1991b; 1994c; 2003d; 2008a.
44. For a very cogent criticism of the use of 'silver prices' in economic history, see Van der Wee 1963, Vol. I, 115–122. My arguments, while endorsing Van der Wee's fully, concern other related issues. See also on this same theme: Meuvret 1960, 283–311.
45. Furthermore, most historians fail to recognize the reciprocal relationship between a debasement – reducing the silver contents of the coin – and the inflationary increase in the money supply. The actual formula for the increase in the coined value of silver from a debasement is: $(1/1 - x) - 1$, where x = the percentage reduction in the silver content of the money of account. Thus a 10.00 percent reduction in the fine silver contents will lead to a 11.11 percent increase in the number of pennies coined from the mint weight of fine silver. See Munro 2008c, 16–18, 40–44; 1988a, 388–403, 417–418.
46. See my publications in nn. 40–43 above, for an elaboration of these analyses. For bimetallic ratios, see in particular Munro 2007b.
47. Although the wages and some of the prices were actually presented in the Brabant *groot* money-of-account, they were readily converted into Flemish money by dividing the Brabant wages and prices by 1.5 (the fixed ratio of the two currencies from 1435 to 1790). See Van der Wee 1963.
48. The Mechelen *stadsrekeningen* accounts for cloth purchases (see Table 10) indicate that three men's suits were made from each *rooslaken* broadcloth, *i.e.*, about 10 Flemish ells (1 ell = 0.700 metres); Van Uytven 1983, 151, states that a complete outfit – 'a surcoat, a coat, a hood and a pair of trousers' – required about 15 ells (10.50 metres).
49. For the estimate of 210 days annual employment, see Van der Wee 1963, Vol. I, 457–460 and 540–544; Munro 2005a, 1028–1031; 1994d.
50. But that assumption will be challenged in the conclusions to this study.
51. For England, see Phelps Brown and Hopkins 1956, reprinted in Carus-Wilson 1954–62, vol. II, 179–196, and also in Phelps Brown and Hopkins 1981 containing tables not presented in their earlier publications.

I have recalculated their entire price index, from 1264 to 1700 from: Archives of the British Library of Political and Economic Science (London), Phelps Brown Papers Collection, Box Ia.324. For Brabant, see Van der Wee 1975, reissued in English translation (but without the tables) in Van der Wee 1978 and reprinted in Van der Wee 1992. I have presented my own versions of these two price indexes, as used in this current study. For Flanders, see Flemish price index, in Munro 2003a, 231; and a fuller version Munro 2005a, 1048–1050.

52. Other alternative indexes are to be found in: Allen 2001; Clark 2005; 2007. In another study, I have explained why I cannot use such price-indexes, apart from their reliance on 'silver equivalents': see Munro 2005a, 1013–1031.
53. The Van der Wee Brabant consumer price index (1400–1700), contains ten commodities: wheat (126.0 litres), barley-malt (162.0 litres), beef (23.5 kg), herring (40 in number), butter (4.8 kg), cheese (4.7 kg), charcoal (162.0 litres), candles (1.333 kg), linen cloth (1.800 metres), and low-grade coarse woollens (1.125 metres). Grains (rye and barley) account for 18.24 percent of the basket by value; drink (barley malt), for 17.08 percent; meat (beef), for 23.53 percent; fish (herring), for 4.30 percent; butter and cheese together, for 11.05 percent; fuel and light (charcoal and candles), for 7.82 percent; and textiles (linen and coarse woollens), for 18.00 percent. The Phelps Brown and Hopkins index contains 16 commodities: wheat (45.461 litres); rye (36.369 litres); barley (18.184 litres); peas (24.243 litres); barley-malt (163.659 litres); pigs (0.500); sheep (0.500); beef (14.696 kg); herrings (40 in number); butter (4.536 kg); cheese (4.536 kg); charcoal (154.567 litres); candles (l.247 kg); lamp oil (0.284 litres); linen (0.610 metres); shirting (0.457 metres); coarse woollens (0.304 metres). Farinaceous products account for 20.00 percent of the basket; drink (malt), for 22.50 percent; meat, for 21.00 percent; fish, for 4.00 percent; fuels, for 7.50 percent; and textiles, for 12.50 percent. While the Phelps Brown and Hopkins and the Van der Wee commodity price index cover the entire period of this study, my Flemish price index covers only the years 1350–1500. My Flemish price index (1350–1500) contains eight commodities: wheat (45.461 litres), rye (36.369 litres), barley (18.184 litres), peas (24.243 litres); barley-malt (163.659 litres); butter (13.610 kg); cheese (13.610 kg); and coarse woollens (1.225 metres). The farinaceous (grain) products account for 24.19 percent of the basket; drink (barley-malt), for 20.43 percent; butter and cheese, for 35.37 percent; and textiles, for 20.01 percent. See n. 51 above. I have presented, online, an Excel file with a quantitative analysis of these three indexes, with the values of each commodity in the local money-of-account, in: http://www.economics.utoronto.ca/munro5/ClothPriceExplan.htm.
54. See Munro 1973, 100–103; Spufford 1970, 152–163; Van der Wee 1963 ,Vol. I, 123–129.
55. See n. 51 above. This observation was a careless after-thought on their part. I have calculated that the actual mean value of their 'basket of consumables' for the base period 1451–75 was, instead, 112.08d sterling (9.340 shillings). See n. 80 below.
56. See Munro 2005a.
57. More explicitly, the formula for calculating real wages is: RWI = NWI/CPI: *i.e.*, the Real Wage Index equals the Nominal (Money) Wage Index divided by the Consumer Price Index. That is: the average of the prices and of the wages, both nominal and real, for the 25–year period 1451 to 1475 are used as the common denominators, so that the means (averages) = 100.00. An index number of, say, 125 for either the 'real wage' or the 'real price' of a textile means that the nominal wage or price is 25 percent higher than that of the mean price or wage for the base period, 1451–75=100.
58. See Van der Wee, and other sources cited, in n. 49 above.
59. The intervening column 15 is the arithmetic mean value of the 'basket of consumables' for this period.
60. See Sloan and Zurcher 1953, 149–150; and also Mills 1956, 108–112, 401. The mathematical equation is: HM = 1/ [$\sum$ ($1/r_1 + 1/r_2 + 1/r_3 + \ldots 1/r_n$)] / N, where *r* is the value and N is the number of years in the series averaged. It can also be used in index numbers for, say, real wages: the purchasing power of the nominal, money wage = Nominal Money Wage Index divided by the Consumer Price Index. If five-year means of real wages were calculated for the base period of this index – *i.e.*, 1451–75 = 100, then the mean value as the average of the five 5–year periods in this base period would equal exactly 100.00 only if the harmonic mean is used.
61. Such table (for Ghent in the 1360s) has been presented in Munro 2008d.

62. See the sources for Table 1.13 (also the sources for Tables 1.11–1.12).
63. See above, pp. 16–18. Here, the current prices of the Ghent *dickedinnen* broadcloths, as purchased for the aldermen (*schepenen*) and burgermasters of Ghent, each year, are summed for the base period 1451 to 1475; and that sum is divided by 25 (the number of years) to provide the mean value of £7.91244 *groot* Flemish for this base period. Next, all the cloth prices, from 1331 to 1570, are divided and that value and multiplied by 100 to obtain the index number value for each year. Thus, all of the annual index numbers represent a percentage of the mean value of these textiles in the base period 1451–75. Those index numbers for the Ghent *dickedinnen* cloth prices are then divided, each year, by the Flemish Commodity Price Index value for each year (with the same base 1451–75 = 100), to obtain the 'real' value index number for these cloths for each year. As an equation: RCVI = DPI/CPI: the Real Cloth Value Index equals the *Dickedinnen* cloth price index (in terms of price in Flemish pounds *groot*) divided by the Flemish Commodity Price Index, whose mean value for the base period 1451–75 = 126.295d *groot* Flemish. For the construction of the Flemish Commodity Price Index, see n. 51, above.
64. See nn. 51, 54, above.
65. For the evidence, see Munro 2005a, 1041–1076 (including tables and graphs). For both principalities, one may readily observe that textile prices, other commodity prices (*i.e.*, those in the 'basket'), and money wages did not change in tandem with each other.
66. See Table 1.1; Munro 1973, 65–179; 1970, reprinted in Munro 1992; 1978; 1995; 1999b; 2005b.
67. See Munro 2003e; 2003d; 2008a.
68. For a comparison of the prices of 15th-century silk fabrics, scarlets, and other dyed woollen broadcloths, nn. 6 and 20 above.
69. See Table 1.1 and nn. 2 and 6 above; and esp. Munro1983a, Tables 3.4–3.14; 2007a, Tables 4.2–4.5; 1978; 2003b, 186–191 and Table 5.1, Table 5.2, Table 5.3; and Munro 2005b; 2007c.
70. See Munro 1983a, tables 3.4–3.5; 2007a, 56–76 and 87–93, esp. Tables 4.2 and 4.3; and see also Cardon 1990. Thanks to the experiments of the British scientist William Perkin, in 1856, first mauve and then other dyes have been chemically synthesized as aniline dyestuffs [C6H5(NH2)] from coal tars, at a fraction of the cost of former vegetable and animal dyestuffs. See Jenkins 2003a, 764.
71. See Munro 1983a, 29–63; 2007a, 56–76. White scarlets were those undyed, unfinished woollen broadcloths that were commissioned to be dyed uniquely in grain, to produce red scarlets (*roode scaerlakenen*), as the accounts also make absolutely clear, according to the Flemish tripartite textile technology that distinguished between 'white' cloths, 'blue' cloths, and 'medley' cloths. 'Medley' cloths – *geminghede* and *strijpte lakenen* – were the same fine woollens that were woven from either a mélange of variously coloured wools, both blue and red, or cloths that were woven from warp yarns whose colour was different from that of the weft yarns. It was fairly common to redye these latter woollens 'in grain', to produce, for example, *strijpte scaerlakenen*.
72. For this article, see the one previously indicated: Munro 2007a, 56–77, 84–86, 91 (n. 49). The last purchase of a scarlet recorded in the Bruges town accounts was in 1482 (see the sources for Table 1.7a,); in Ypres, the last documented purchases was in 1486. See Munro 1983a, 43. In 15th-century Italy, however, scarlets certainly continued to be popular. In the years 1451–76, the Florentine woollen cloth industry accounted for 13,528 of the total of 27,210 woollens sold in Rome (virtually half: 49.72 percent); and of these Florentine woollens, 5,354 (39.58 percent) were extremely costly kermes-dyed scarlets (*panni di grana*). See Hoshino 1980, Tables XLII–XLIII.
73. The linguistic source of this view is based on the supposition that the Flemish term *scaerlaken* was derived from the Flemish verb *scheren* (to shear) and the noun *laken* (cloth). The scholarly elaboration of that etymological thesis, accounting for the ongoing popularity of this erroneous notion, is to be found in just one publication: Weckerlin 1905, 12. I explore the etymological origins and evolution of the term 'scarlet' – unknown in the ancient world (before 1000 AD) – offering alternative explanations, in Munro 1983a; 2007a.
74. See Munro 1983a, tables 3.4–3.5; Algemeen Rijksarchief België, Rekenkamer, nos. 38,636–38,710.
75. For the quinquennial harmonic mean values (*i.e.*, for five-year periods) of the Bruges scarlets, in terms

of the number of days' wages that a master mason would have had to spend to acquire just one such scarlet, see Table 1.7a.

76. For the quinquennial harmonic mean values (*i.e.*, for five-year periods) of the Mechelen scarlets, in terms of the number of days' wages that a master mason would have had to spend to acquire just one such scarlet, see Table 1.8.
77. See Table 7a.
78. See Table 8.
79. Munro 2007a, 55–56, 87–93.
80. Phelps Brown and Hopkins never published these values, in pence sterling (see n. 51, above). Instead, I calculated these values in pence sterling from their worksheets, in the Archives of the British Library of Political and Economic Science, while also correcting hundreds of errors in their own calculations. My methodology in computing the annual values of these baskets has been explained in Munro 2005a, 1014–1028.
81. Those master masons at Oxford and Cambridge were still earning only 6d per day, until the 1536, when the wage rate rose to 6.5 d per day, and to 7d, in 1542. Phelps Brown and Hopkins 1981, 1–12.
82. See in particular Munro 2003b, 182–191; 2003c, 249–262, 288–290; 1997, 35–66; and esp. Munro 2005b. These three 'nouvelles draperies' in this table were amongst those that came to substitute Spanish *merino* wools for at least some English wools, from the later 1420s.
83. See Tables 1.2, 1.3, 1.4, and 1.5 above, for the relevant data.
84. See sources cited in n. 43 above.
85. See pp. 13–16 above, and Table 1.2.
86. In the post-Christmas sales of late Dec. 2007, I purchased such a fine wool-based suit on sale in Toronto for $512.00 (€320) – but the regular price was double that amount. Some wealthy men, but presumably not carpenters (nor me), might spend several thousand dollars on a suit. Obviously women's clothing, then and now, cannot enter into this same comparison.
87. See Munro 2008b. England, however, did have a progressive income tax, under Henry VIII (abolished in the reign of Elizabeth), but no such consumption taxes, before the 1640s. See Schofield 2004.
88. See Chapman 1972, esp. 20; and note that mechanization also involved the cotton gin, with a dramatic fall in the cost of raw cotton; see also Farnie 2003. For woollen and worsted textiles, see Jenkins 2003a and Jenkins and Ponting 1982, 27–56, 77–124.
89. Endrei 1971; 1981; 1983; 1990; Van Uytven 1981. According to an English Parliamentary commission report for the period 1781–1796 (before the introduction of any machinery), two men and a boy weaving a superfine broadcloth of 34 yards, with 70 lb. of wool, then required 364 man-hours (= about 15 days per man); and another 888.3 man-hours were spent in wool preparation, spinning, reeling, and warping; and a further 207 hours in cloth finishing, for a total of 1459.35 hours in total cloth manufacturing. See Lipson 1965, 258, Appendix II, based on Great Britain, *Parliamentary Paper,* vol. 23, 439–42. For a late 17th century estimate (Hale, 1683) three weeks for the production of a fine woollen broadcloth, see Lipson 1965, 257. For other documents on cloth-manufacturing costs in the 18th century English woollens industry, see Mann 1971, 321–329. See also n. 26 above.
90. For England in the 1540s, see: Wrigley, Davies, Oeppen, and Schofield 1997, 613–616. See also Wrigley and Schofield 1980, 528–529. For the world in 2007, see: *2007 World Population Data Sheet* (Population Reference Bureau): http://www.prb.org/.
91. Phelps Brown's 80 percent budget allocation for food and drink – 81.70 percent according to my calculations – consists of 20.00 percent for bread grains (19.33 percent according to my calculations), 22.50 percent for drink (21.48 percent according to my calculations), and 37.50 percent for meat, fish, and dairy products (40.89 percent according to my calculations). Van der Wee's total budget allocation for food and drink (Brabant), with a share of 74.19 percent, consisted of: 18.24 percent for bread grains, 17.08 percent for drink, and 38.87 percent for meat, fish, and dairy products combined. My total budget allocation for food and drink, with a share of 79.99 percent (for Flanders), consisted of 24.19 percent for bread grains, 20.43 percent for drink, and 35.37 percent for meat and dairy products: See nn. 40, 42, 80 above; and in particular Phelps Brown and Hopkins 1956, Table 1, 297–298; Van der Wee 1978; Munro 2003a, 231, Table 1.

92. Phelps Brown and Hopkins' budget shares were based upon Wood-Legh 1956, for the base period of 1451–1475; and for the late 18th century they used, in particular, Eden 1797. Van der Wee's sources may be found in Van der Wee 1966, republished in translation in Van der Wee 1993, 279–287: in particular, those for the Beguinage Infirmary of Lier (1526–1602); the St. James Hospice at Lier (1450); an Antwerp orphanage, 1586–1600 (listing food expenditures for Antwerp labourers employed there); the soldiers of the Antwerp garrison (1568); and the soldiers of the Frisian expeditionary corps sent to Brazil (1648). See also Van der Wee 1963, vol I, 533–537.
93. Source: http://www.statcan.ca/english/Subjects/Cpi/cpi-en.htm
94. Admittedly, that omission of housing or shelter from the late-medieval 'baskets of consumables' does skew the comparison with the modern Consumer Price Index: for if shelter had been included in the former 'baskets' the shares for food and drink would have been less.
95. From Hobbes 1651, part 1, chapter 13: cited in *The Columbia World of Quotations*.

APPENDIX

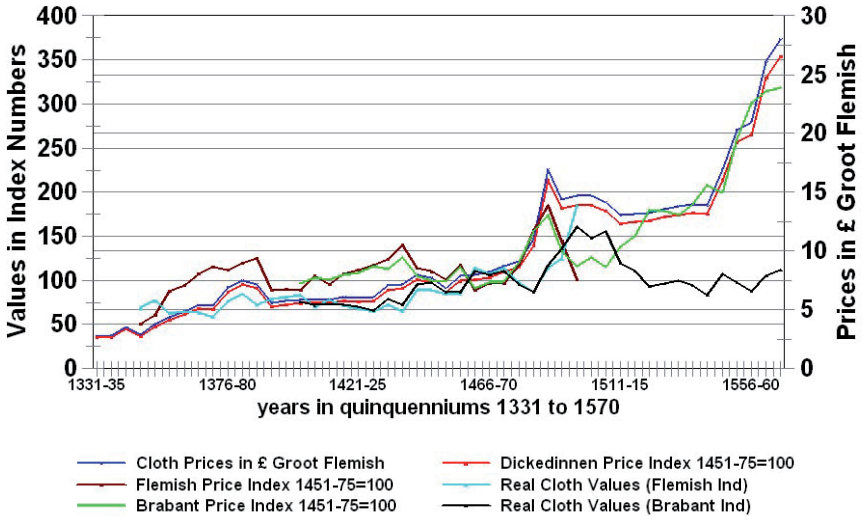

Fig. 1.1: The prices and relative values of Ghent dickedinnen broadcloths, as purchased for the burgermasters and aldermen of the Ghent civic government, from 1331 to 1570: expressed in terms of the Flemish pound (£) groot (20 shillings to the pound); and in terms of the Commodity Price Indexes of Flanders (1351–1500) and Brabant (1401–1570), with the Nominal and Real Price Indexes for Ghent dickedinnen broadcloths, in quinquennial means, 1331–35 to 1566–70.

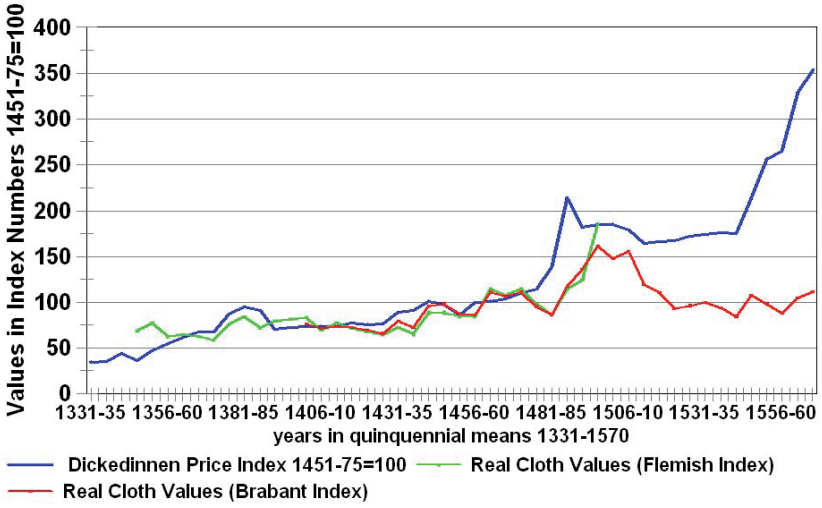

Fig. 1.2: The value of Ghent dickedinnen broadcloths, 1331–1570, in quinquennial means, as purchased for the burgermasters and aldermen of the Ghent civic government. The nominal and real price indexes for the Ghent dickedinnen broadcloths: based on the Flemish Commodity Price Index (1351–1500) and Brabant (1501–1570).

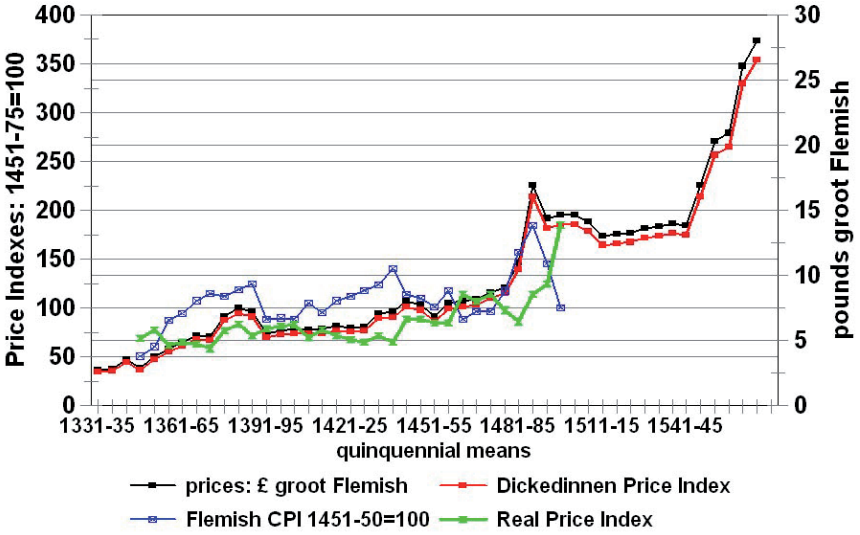

Fig. 1.3: The prices and relative values of Ghent dickedinnen broadcloths, 1331–1570, in quinquennial means, as purchased for the burgermasters and aldermen of the Ghent civic government. Prices in pounds groot Flemish (20s = £1 = 240d) The nominal and real price indexes for the Ghent dickedinnen broadcloths: based on the Flemish Commodity Price Index (1351–1500)

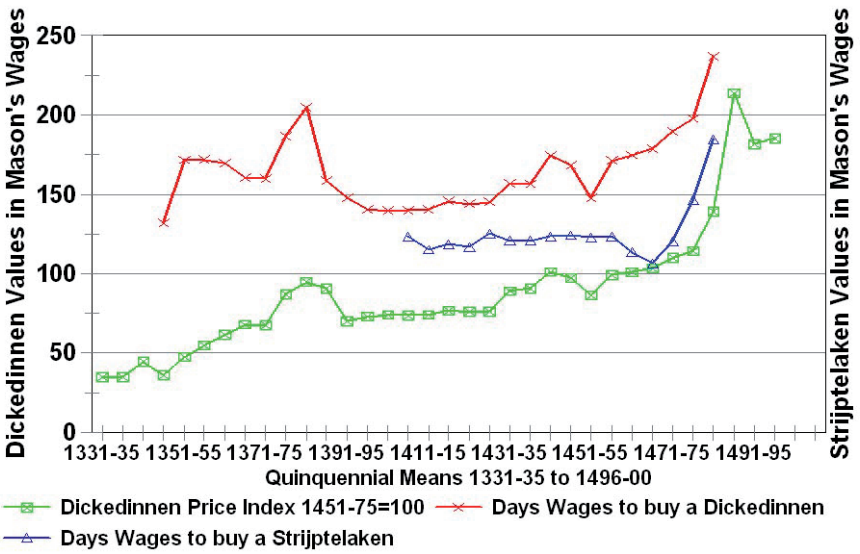

Fig. 1.4: The values of Ghent dickedinnen broadcloths purchased for the burgermasters and aldermen of the Ghent civic government, from 1331 to 1500, in relation to a master mason's daily wage, in quinquennial means: The number of days' wages that a Bruges master mason would have had to spend to buy one of these broadcloths.

Fig. 1.5: The values of Ghent dickedinnen broadcloths purchased for the burgermasters and aldermen of the Ghent civic government, from 1401 to 1570, in relation to a master mason's daily wage, in quinquennial means: The number of days' wages that an Antwerp master mason would have had to spend to buy one of these broadcloths.

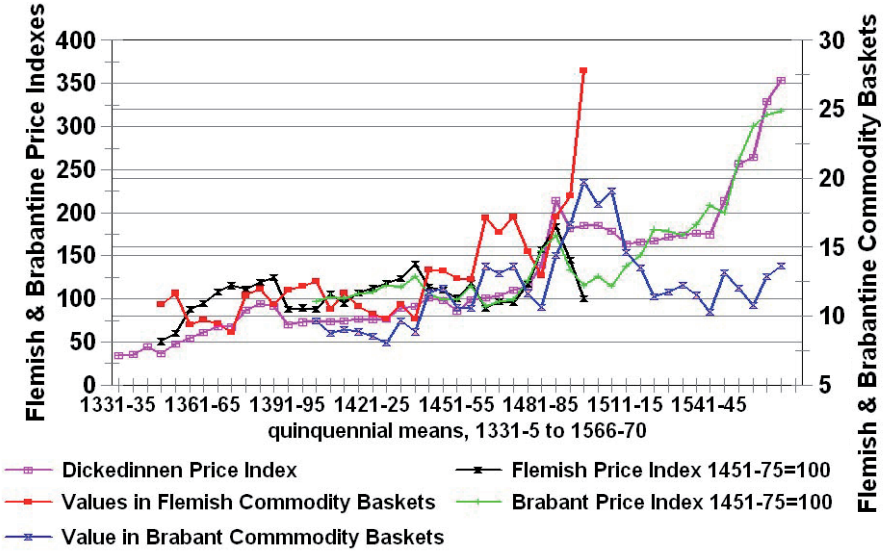

Fig. 1.6: The relative values of Ghent dickedinnen broadcloths, as purchased for the bugermasters and aldermen of the Ghent civic government, from 1331 to 1570: in quinquennial harmonic means. The number of Flemish Commodity Baskets ('Baskets of Consumables') equal to the value of a single Ghent dickedinnen broadcloth, 1331–1500, and the number of Brabantine (Antwerp) Commodity Baskets equal to the value of a single Ghent dickedinnen broadcloth, fromm 1401 to 1570. With the Flemish and Brabantine Commodity Price Indexes.

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