Session 1508: DISTAFF I – Focus on Fibre

INTERNATIONAL MEDIEVAL CONGRESS:

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Woollens, Worsteds, and (Hybrid) Serges

English and Continental Terminologies for Wool-Based Textiles and Their Technological Significance (Medieval and Early Modern Eras)

Wool Fabrics & Fibres: problems of comparative terminologies

- **For textile historians of the pre-industrial era, nothing is more confusing and vexing than the very different English and continental nomenclatures (terminologies) for wool based textiles**
- **But in essence, the currently-used English terms are faulty (or misleading), while the continental terms have greater accuracy and validity**
- **To demonstrate this, we begin with early-modern England,** and work back to the medieval eras on the continent and in England

Early-Modern England's Wool-Based Textiles: Old and New Draperies

Well-known 'duality' of England's wool-based textile industries in later 16th, 17th & 18th centuries:

- (1) **The Old Draperies**: **the heavy-weight, fulled, luxury quality woollen broadcloths** (**but** also cheaper kerseys, straits, dozens, etc.)
- (2) **The New Draperies** (so-called): **composed of both**:
- a) **worsteds**: very light, relatively inexpensive
- b) **serges: a hybrid worsted-woollen fabric**, with a **worsted warp and woollen weft**
- - heavier & usually more costly than true worsteds
- - but much cheaper & lighter than woollen broadcloths

‘Duality’ of medieval England’s wool-based textiles

- **Before the advent of the New Draperies (1570s), the accepted duality of England’s wool-based textiles was (supposedly) the following: in terms of fibres, for both warps & wefts --**
- (1) **WOOLLENS:** composed of **very fine, weak, short-stapled, curly wool fibres**, that were prepared by **carding** and spun on the **spinning-wheel:** but **not** true of medieval woollens
- (2) **WORSTEDS**: composed of **coarse, strong, longer-stapled, straight wool fibres** that were prepared by **combing** and spun on the ‘**rock**’ (**distaff** with **weighted drop-spindle** of stone or bone)

Worsteds: according to Wikipedia & Answers.com

- **Worsted** (pron.: /ˈwʊstɨd/) is a type of yarn, the fabric made from this yarn, and a yarn weight category. The name derives from Worstead, a village in the English county of Norfolk. This village, together with North Walsham and Aylsham, became a manufacturing centre for yarn and cloth in the 12th century when pasture enclosure and liming rendered the East Anglian soil too rich for the older agrarian sheep breeds
- Worsted was made from the long-staple pasture wool from sheep breeds such as Teeswaters, Old Leicester Longwool and Romney Marsh. Pasture wool was not carded: instead it was washed, gilled and combed using heated long tooth metal combs, oiled and spun. When woven, worsteds were scoured but not fulled.[1]
- Read more: http://www.answers.com/topic/worsted#ixzz2TaR7jGnv

The Continental medieval & early modern wool-textile terminologies

- **Continental duality is totally different** (**and much more accurate!**):
- A) **French**: ***draperie ointe vs. draperie sèche*** (latter also known as: ***draperie légère)***
- B) **Dutch/Flemish**: ***gesmoutte draperie*** [*lakenindustrie*] vs. ***drooge draperie***
- [latter also: ***lichte draperie****, lichte lakenindustrie*]
- - **for both, the contrast is thus between** the **greased** and the **dry** (**ungreased)** draperies
- - the latter also known as the **light draperies**

Why greasing is the true and crucial distinction (1)

- (1) **short, curly, scaly fibred wools were necessarily greased (after scouring):** using **butter** (or fish oils) in the north, and **olive oil** in the Mediterranean regions
- a) **After the preliminary wool-beating and wool-sorting, such short-fibred wools were first thoroughly scoured and cleansed in hot water with detergents** ➔ to remove the natural **lanolin** in the wools
- b) **subsequently, they were greased - before preparation (combing or carding), spinning, and weaving: to protect these very fine delicate and scaly fibres** from combs, cards & other textile tools

Why greasing is the true and crucial distinction (2)

- (2) **The coarser, straighter, stronger, longer-fibred wools were NOT so scoured**
- - they thus retained their **natural lanolin**
- - **which provided sufficient lubrication** & protection for these stronger, longer, straighter fibres in the processes of combing, spinning, weaving, etc.
- - **hence these wools were left 'dry'** (or only very lightly oiled before combing & spinning)

‘Greased’ Woollens and Fulling (1)

- 1) **Importance of their short-fibred wools: very fine, curly, scaly fibres had excellent felting properties** (in fulling processes)
- 2) **When woven into cloth, such short-fibred wools lacked cohesion, strength, durability ➔**
- 3) **Fulling absolutely necessary to provide these properties:** lest the woven cloth fall apart
- 4) **Fulling Vat: long stone vat filled with hot water, fuller’s earth (kaolinite), soap, and urine**: into which the woven cloth, taken from loom, was immersed, and then **trod upon** or pounded

‘Greased’ Woollens and Fulling (2)

- 5) **Foot-fulling vs. mechanical fulling:**
- a) **Foot-fulling:** traditional mode for centuries
- - **two journeymen fullers**, supervised by a master, **trod upon the broadcloth** (about 30 m. by 2.54 m.), for 3 to 5 days (according to quality)
- b) **Mechanical fulling: water-mills, with crank & flyshaft**, to convert **rotary into reciprocal power**: operating two **oaken-wood hammers**: to pound the cloth, in alternation, for about 12 hours

‘Greased’ Woollens and Fulling (3)

- 6) **Fulling Mills: in European cloth production**
- - first used in 10th-century Italy; in northern Europe from 12th century
- - widespread in England from later 13th cent
- a] **pros: cost savings of about 75%** (reducing value-added cost from 20% to under 5%)
- b] **cons: belief that mill-pounding damaged delicate wool fibres** → resisted in luxury-quality cloth industries, esp. in Low Countries

‘Greased’ Woollens and Fulling (4)

- 7) **Three-Fold functions of Fulling Woollens:**
- a) **scouring & degreasing**: **to remove the butter or oil**: urine & fuller’s earth combined with grease ➔ soap for further cleansing
- b) **felting**: **to force the curly, scaly, short fibres to interlace**, interlock into **cohesive, ultra-strong, durable cloth** (virtually indestructible)
- c) **shrinkage**: **by up to 55% by area** (more width than length) ➔ **chief reason for heavy weight**

‘Greased’ Woollens and Fulling (5)

- 8) **Fulling and Woollen Cloth Finishing:**
- a) **fulled cloths stretched on to a tentering frame (with tenter hooks)**: to remove wrinkles & restore some of the loss from shrinkage
- b) **subjected to ‘raising’ or teaseling** (both wet & dry), to raise the nap (loose fibres)
- c) **napped cloth then shorn with razor-sharp steel shears**: repeated napping & shearing [aka: raising and cropping]
- d) **fulled & shorn woollens: weave patterns obliterated** → texture as fine as silk

FIGURE 189—*Raising cloth before cropping. From the Clothiers' window at Semur-en-Auxois. c 1460.*

FIGURE 190—*Shearing (or cropping) cloth. From the Clothiers' window at Semur-en-Auxois.*

Worsteds vs Woollens (1)

- 1) **Worsteds and their wools**
- a) **warp and weft yarns**: both spun from **dry**, strong, straight, **long-stapled combed wools**
- b) **fabric basically completed when woven**: its long-stapled wools provided the woven fabric with **sufficient cohesion, strength, and durability on the loom**, thus without fulling – but not as strong & durable as a fulled woollen cloth.
- c) **finishing**: by dyeing, pressing, calendaring (running cloth through rollers ➔smoothing)

Worsteds vs Woollens (2)

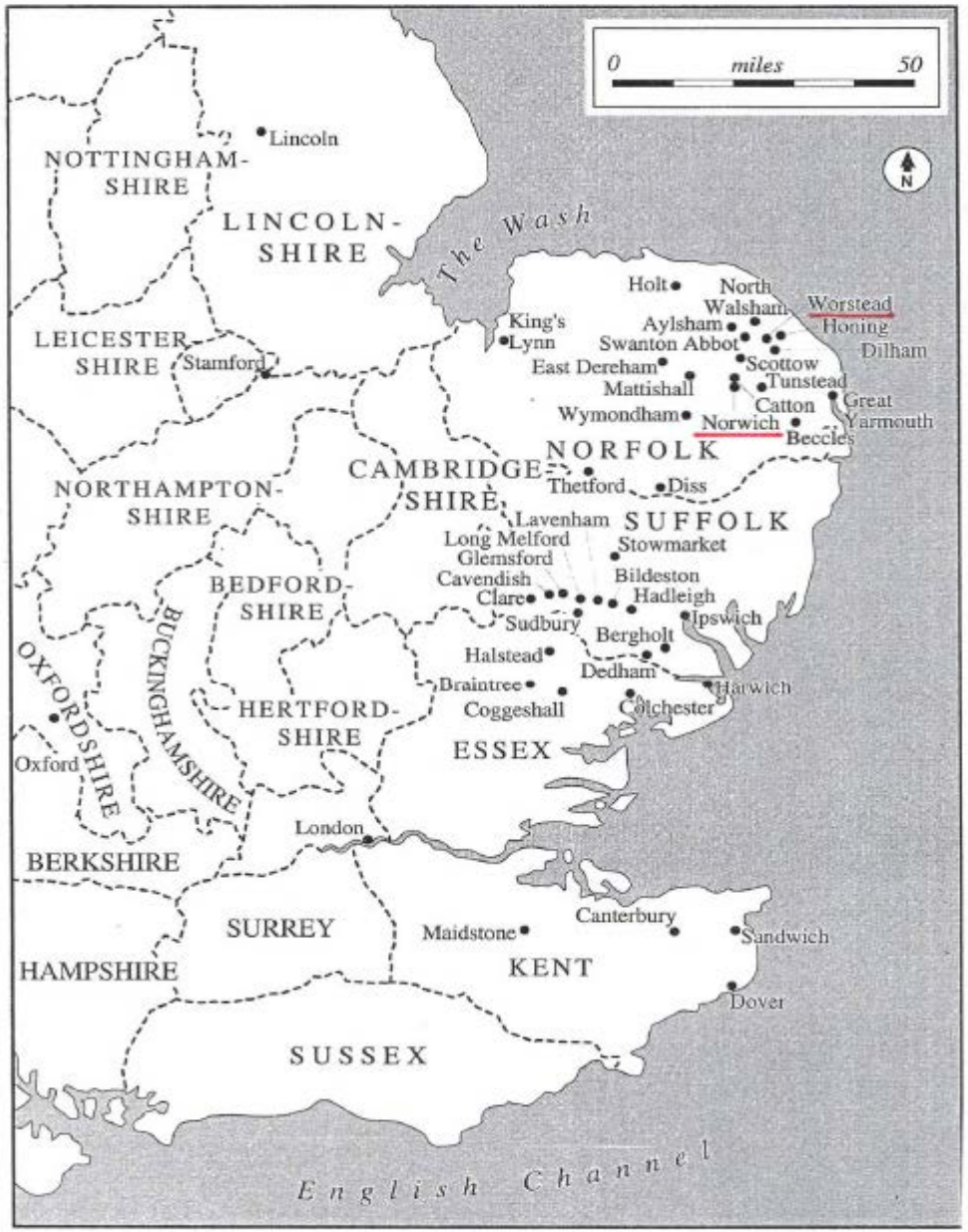
- 2) **Worsteds: differences from true woollens**
- a) **no fulling, napping, shearing** required
- b) **worsteds thus distinguished by their highly visible weaves**: often **lozenge or diamond twill** (obliterated in fulling/finishing woollens)
- c) **worsteds much lighter than woollens** (including kerseys): often only 25% as heavy
- d) **worsteds were generally much cheaper than woollen broadcloths:** though not that much cheaper than coarser woollens, such as ‘straits’

Worsteds vs Woollens (3)

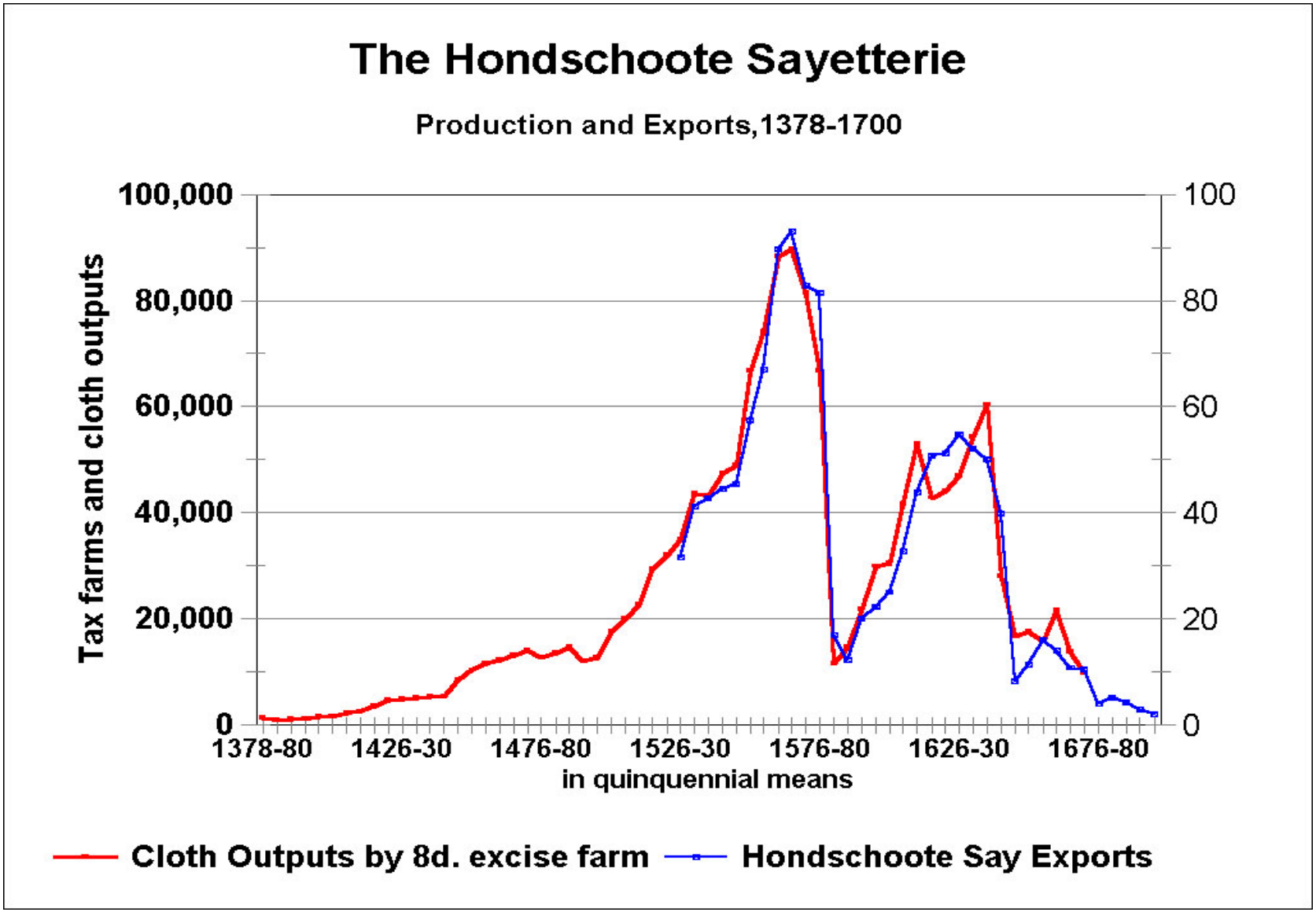
- 3) **Serges: hybrid worsted-woollens**
- a) **worsted, dry, combed WARP** and **a greased woollen, carded WEFT**
- b) **cursory fulling only**: chiefly to remove the grease:
- - **Hondschoote sayetterie**: one day of fulling only
- c) **between worsteds and woollen broadcloths** in weight and value: but most were far closer to worsteds in both respects
- d) **continental draperies**: these fabrics were classed with worsteds as *draperies sèches, draperies légères*;
- - generally known as **serges** (from the 12th century)

Worsteds vs Woollens (4)

- 4) **England's New Draperies: from 1570s**
- a) **serges: most important component of New Draperies** in East Anglia (Norfolk, Suffolk)
- b) **Other names**: says, bays, stuffs, bombasines, perpetuanas [**say:** from *saga* = Roman military cloak]
- c) **also other mixed fabrics**: using goat's hair, linen, cotton, silk, etc.; along with true all-combed worsteds
- d) **New fabrics imported by Flemish Protestant refugees,** with Revolt of Netherlands (1568-1609)
- e) **Hondschoote sayetterie**: chief model (with dry worsted warps and greased woollen wefts)



Map 2. East Anglia, showing places referred to in the text


The Hondschoote Sayetterie
Production and Exports,1378-1700
Tax farms and cloth outputs
100,000
80,000
60,000
40,000
20,000
0
100
80
60
40
20
0
1378-80
1426-30
1476-80
1526-30
1576-80
1626-30
1676-80
in quinquennial means
Cloth Outputs by 8d. excise farm
Hondschoote Say Exports

Coleman on Origin of the 'New Draperies': terminological confusion 1

- 1) **D.C. Coleman: origins of England's New Draperies (its hybrid fabrics) to be found ultimately in Italy, though via Flanders, from 1570s**: see Coleman, 'The New Draperies', *Economic History Review*, 22:3 (Dec 1969)
- 2) **Reason: that Italians (Florence) had long produced similar mixed fabrics:** supposedly with a **worsted warp and a woollen weft**
- **-** but in fact not so!

Coleman on Origin of the 'New Draperies': terminological confusion 2

- 3) **Coleman's Errors - shared by many historians:**
- a) **Not realizing that these Florentine cloths were genuine heavy weight costly woollens** of the true ***draperie ointe***: made entirely from **greased**, fine, very short-stapled wools: indeed from very best English wools: Welsh Marches & Cotswolds
- b) **Not knowing that almost all later-medieval woollens, north and south, were made from COMBED warps and CARDED wefts** - or made **entirely from combed** but **short-stapled** wools

Solution to the Coleman Conundrum: the medieval evolution of spinning (1)

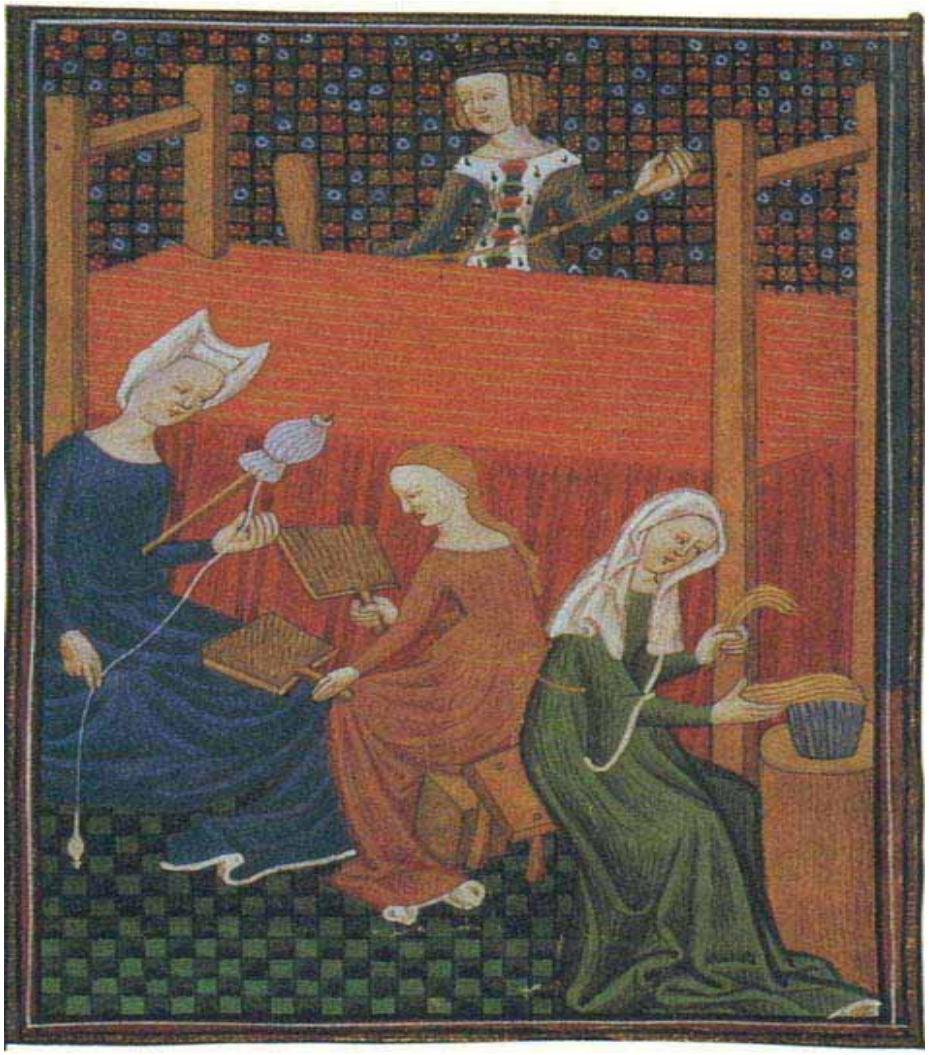
- 1) **All European woollens had once been made uniquely from short-fibred combed wools**, which were '**rock'-spun** (distaff & drop-spindle), before the later 13th or 14th century
- - smaller, finer-toothed combs than for worsteds
- 2) **Later 13th – 14th century: introduction of both CARDING & the SPINNING WHEEL**, from **Muslim Spain** (cotton industries)
- 3) **Fierce opposition to both throughout western Europe for luxury woollens**: on grounds of both **quality and cloth-durability**

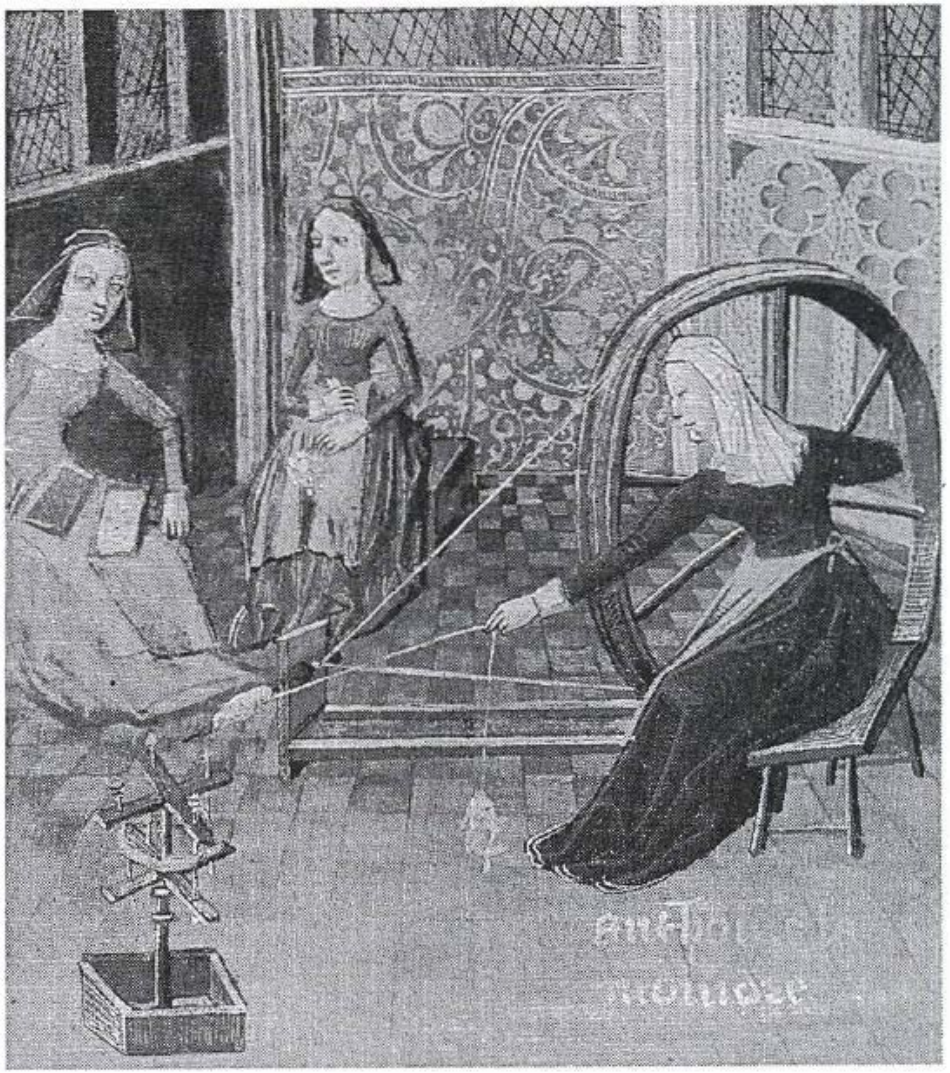
Medieval Evolution of Spinning (2)

- 4) **Chief problem cited: spinning-wheel's defects**
- a) **that wheel-spun carded wools – from curly short-fibred wools** -- produced yarns that were too **weak , uneven, and knotty** for warp yarns
- b) **reason: discontinuous nature of wheel-spinning**: in drafting, twisting, & winding- on ➔ yarns of uneven thickness & strength [Bruges: *Livre de Mestiers*, 1349]
- 5) **Countervailing advantages**: **carding and spinning wheel provided enormous labour-cost savings** in preparing short-fibred wools to become yarns for loom: a 3-fold or more productivity gains

Medieval Spinning: Drop-Spindle

Medieval spinning, carding, combing





4 Boccaccio: *De claris mulieribus*. New York Public Library, Spencer Collection 33, f.56, illuminated in France *c.*1470. Women carding and spinning wool.

Medieval wheel-spinning at home

Medieval Evolution of Spinning (3)

- 6) **Compromise solution** - that became widespread by mid 14th century: **to permit carded wheel-spun yarns for the WEFT, only,** while requiring traditional **combing + 'rock'-spinning for the WARPS**
- **- that produced both the strongest & finest yarns.**
- 7) **Reason: the weaving process on horizontal loom**
- a) **warps were subjected to enormous stress**, while stretched on the horizontal looms: from warp beams to cloth beams, through lever-operated heddles ➔ so that wheel-spun yarns tended to break
- b) **wefts underwent no such stress**: inserted in shuttles between warps alternatively separated by heddles.

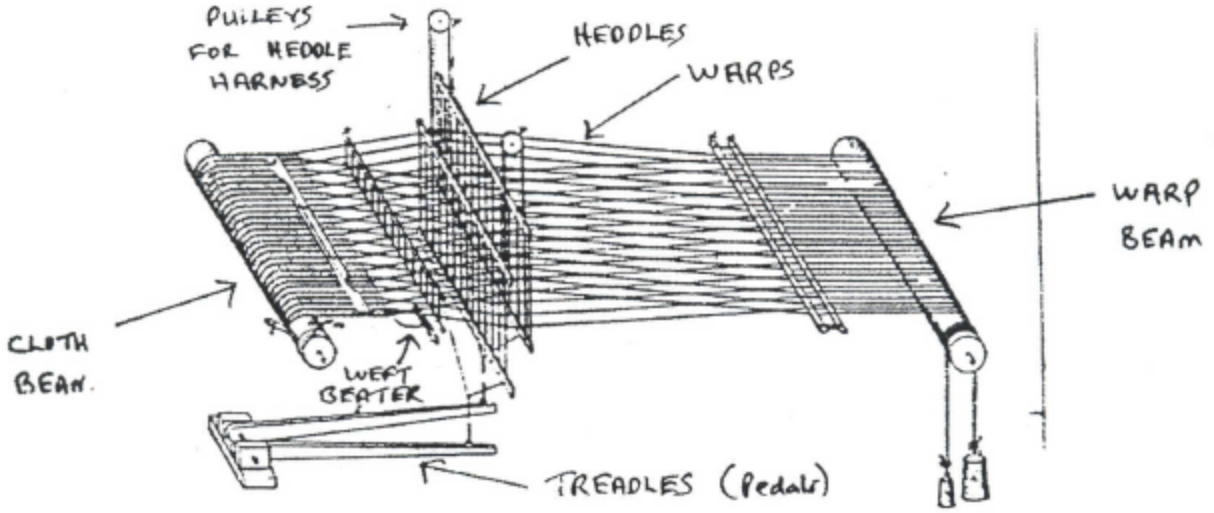
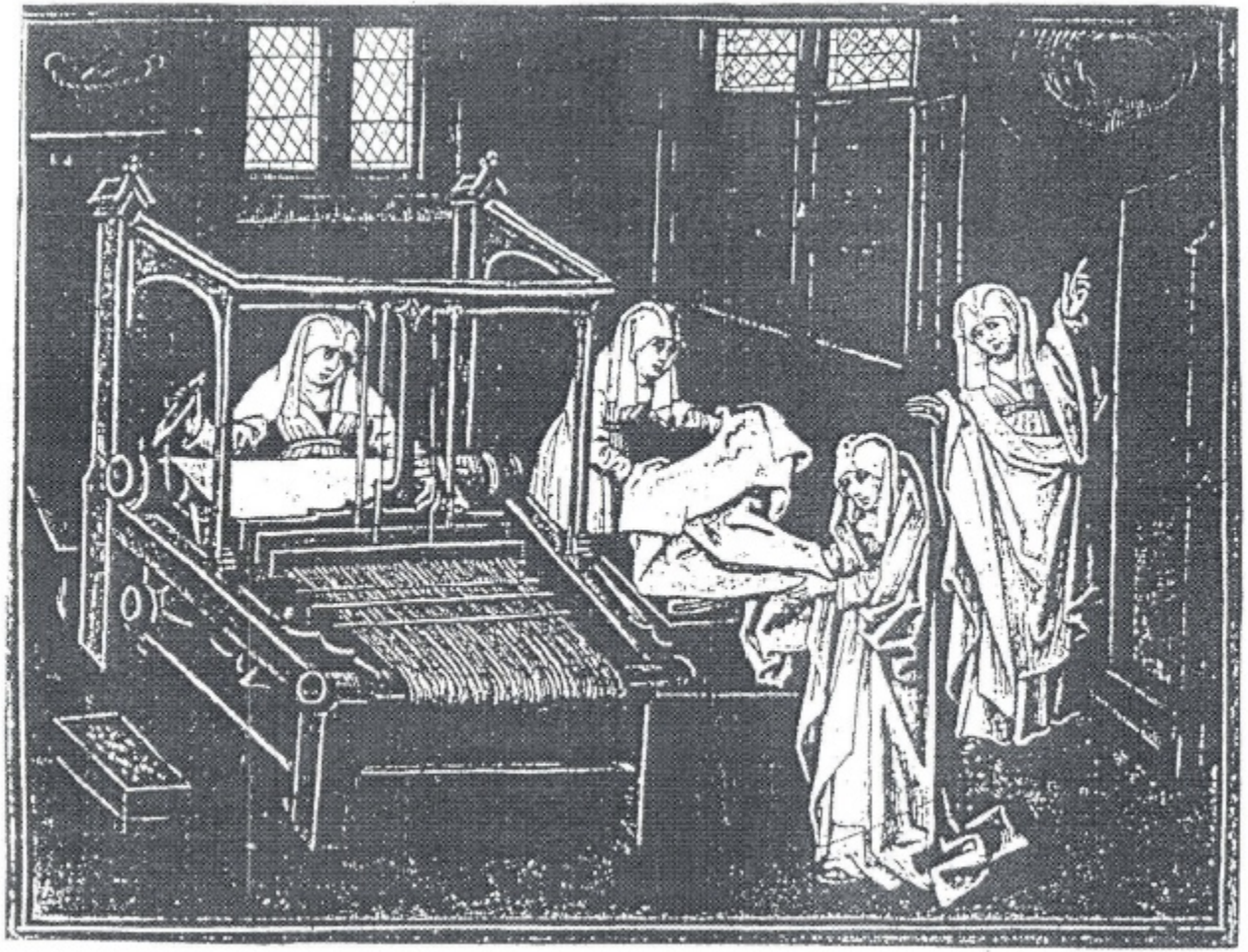


Fig. 87. Loom with pedals.

Medieval Horizontal Loom: with foot-powered treadles



Medieval Evolution of Spinning (4)

- 8) **Adoption of the Flyer (Saxony) Wheel**: **as a possible solution to permit 'all-carded' woollens** – with both **warps and wefts** wheel-spun (subject of debate):
- a) **Flyer Wheel**: from early to mid 15th century
- b) **radical innovation: U-shaped flyer** fixed on the spindle axle containing a **separately rotating bobbin for winding-on the spun yarn** –with continuous belt-drive looped over both the spindle-pulley & bobbin-pulley , to which a 'tensioner' was later added.
- c) **importance: permitted a fully continuous and smoothly operating motion** for drafting, twisting, & winding-on ➔ **even, fine, strong yarns** for warps

The Saxony Spinning Wheel (late 15th century)

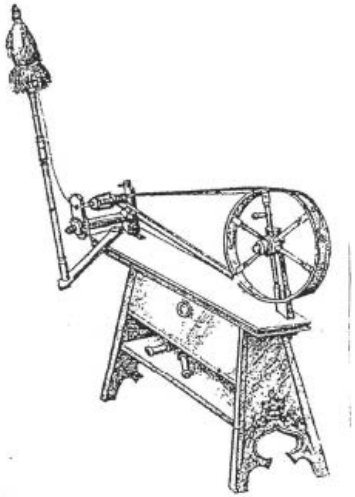
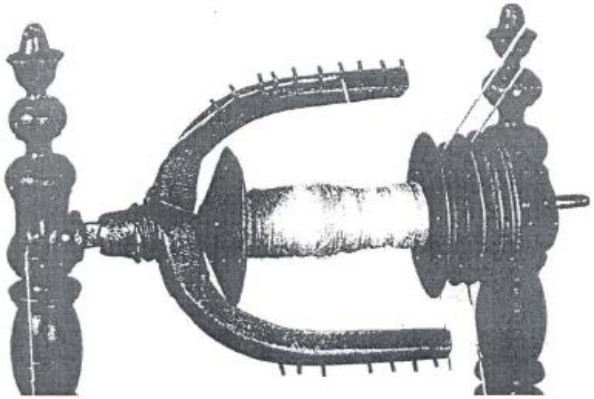


FIGURE 168—*Spinning-wheel with flyer illustrated in* Das Mittelalterliche Hausbuch, c *1480*.



26 Detail of the flyer mechanism showing a bobbin lead, doubled band drive.

Photograph: Crown Copyright, Science Museum, London

Medieval Evolution of Spinning (5)

- 9) **Flyer Wheel in Woollens Industry: some evidence?**
- a) **from 1435: in Mechelen: recorded purchases of *gecaerde lakenen*:** as new, high-priced woollens given to mayor & town aldermen [probably from all-carded yarns]
- b) **1467: Leuven drapery ordinance**: revoked long-standing ban on using 'wheels' for spinning woollen warps in luxury woollen cloths
- c) **1467: Brussels drapery ordinance: same provisions,** permitting drapers to use **either carded or combed** wools in warps for **finest luxury cloths** (even **scarlets**) woven from the best English wools (Fine March, Cotswolds, etc.)
- d) **1464: England: statute 4 Ed. c. 1**: officially recognized and permitted carding in the now regulated woollen crafts

Medieval Evolution of Spinning (6)

- 10) **Some Further Evidence: iconographic**
- a) **1475-80: Swiss *Das Mittelalterliche Hausbuch* (Waldburg-Wolfegg)**: accurate drawings of Flyer Wheel: with U-shaped flyer (see previous slide)
- b) **1490: Leonardo da Vinci's *Codice Atlantico*:** similar drawings of Flyer Wheel
- c) **1513: Lucas Van Leyden:** engraving of spinster with Flyer Wheel
- d) **early 16th cent: Jan Van Galle (Flemish)**: painting of Flyer Wheel with implements for woollens: cards, teasel-frame, cropper-shears
- e) **Picard flyer wheels**: 16th century variants (paintings)

31 A young woman spinning, 1513. Engraving by Lucas van Leyden (1494?–1533).
Photograph: Cliché des Musées Nationaux

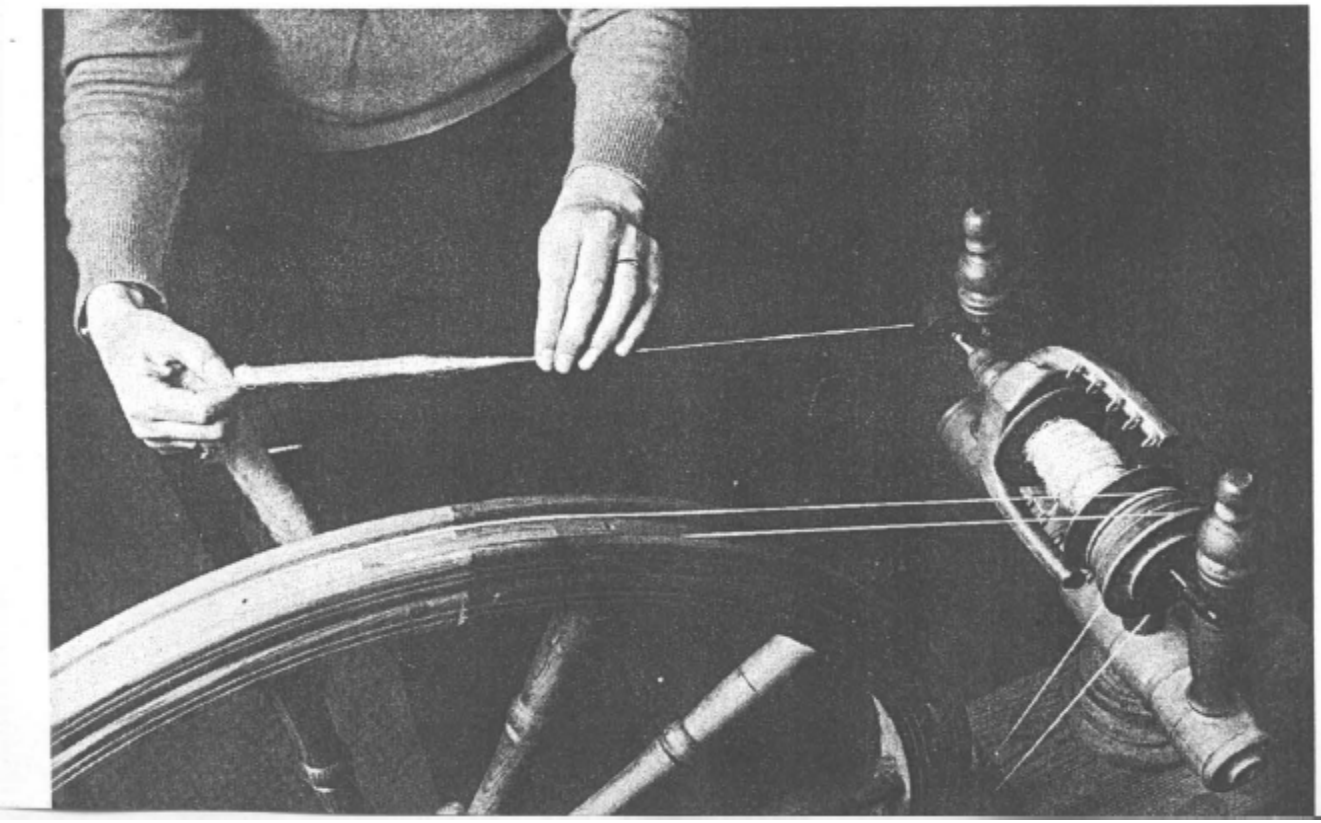
Opposing Views 1

- 11) **Some Opposing Views on All-Carded Woollens and Flyer Wheel:**
- a) **Use of Flyer Wheel in spinning carded warps for woollens is specifically denied in:**
- Hugo Lemon, 'The Development of Hand Spinning Wheels,' *Textile History*, 1 (1968-70).
- Kenneth Ponting, *The Woollen Industry of South-West England: An Industrial, Economic, and Technical Survey* (Bath and New York, 1971).
- **both contend** it was used only for linen and worsted warp yarns

Opposing Views 2

- b) **Patrick Chorley, `Evolution of the Woollen`, in N.B. Harte, *The New Draperies in the Low Countries and England* (Oxford, 1997)**
- - never refers to the Saxony or any Flyer Wheels
- - dates emergence of all-carded woollens later than I do: to the late 16th or 17th century (though possibly earlier in England – but no evidence)
- - **no explanation**: except other improvements in carding and design of the Great Wheel (traditional but large spinning wheel).
- c) **BUT see Patricia Baines**, *Spinning Wheels, Spinners, and Spinning* (London, 1977): for its use in woollens

Baines: demonstration of spinning woollen yarn with the Flyer Wheel



81 Woollen spinning (c
start of the long draw

Old & New Draperies Revisited: 1

- 1) **Old Draperies: Woollens**
- a) **Later Medieval woollens**: composed entirely of fine, short-stapled, curly wools, which were:
- i) **for warps**: combed & rock-spun
- ii) **for wefts:** came to be carded & wheel spun, in most of late-medieval western Europe (though some remained entirely combed)

Old & New Draperies Revisited: 2

- b) **Early-Modern Old Draperies:** using same short-stapled fine wools: **English & now Spanish merino**
- **for which both warps and wefts were composed of carded, wheel-spun wools** (Flyer Wheel for warps?)
- - **all-carded woollens: heavier than semi-carded woollens**, by having far more **carded wool in the warp yarns**, with 1:1 ratio - cf. the table below for Ghent and Armentières woollens
- – **BUT some 16th century cloth industries** retained combed wools for the warps: e.g., in Florence, Leiden;
- - **17th century Leiden**: now making all-carded woollens

Old & New Draperies Revisited: 3

- 2) **New Draperies: Serges as Hybrid fabrics**
- a) **warps**: **DRY** long-stapled, strong, coarse **combed wools**, either rock-spun or spun on Flyer (Saxony) Wheel
- b) **wefts: GREASED** short-stapled, curly, fine wools that were **carded and wheel-spun** (with traditional Great Wheels)
- c) **Origins and model**: Hondschoote sayetterie

Tables on Woollens, Worsteds, and Hybrid Serges

- **Following tables demonstrate that**:
- **worsteds** were generally much **lighter** and much **cheaper** than woollen broadcloths:
- *draperies sèches vs. draperies ointes*
- **serges and other hybrid worsted-woollen** fabrics were in between, but far closer to worsteds than to true woollen broadcloths:

- part of the *draperie légère/lichte draperie*

	TEXTILE DIMENSIONS AND WEIGHTS: THE LOW COUNTRIES AND ENGLAND IN THE SIXTEENTH CENTURY			
Drapery: City/Region	GHENT	MECHELEN	ARMENTIERES	SUFFOLK, ESSEX
Date of Ordinance	1456 and 1546	1544	1510, 1546	1552
A. WOOLLENS				
Name of Textile	Dickedinnen	Gulden Aeren	Oultreffin	Short Broadcloth
Additional Names	Five Seals	Five Seals		Suffolk, Essex
Origin of Wools	England	England: Herefords.	Spanish Merino (2/3)	England
Wool Types	March, Cotswolds	Lemster Ore	English Cotswolds (1/3)	short-stapled
Length on Loom: ells/yds	42.5000	48.0000	42.0000	n.s.
Length on Loom: metres	29.7500	33.0720	29.4000	n.s.
Width on Loom: ells	3.6250	4.0000	3.0000	n.s.
Width on Loom: metres	2.5375	2.7560	2.1000	n.s.
Area in square metres: on loom	75.4906	91.1464	61.7400	n.s.
Weight on Loom: lb.	88.0000	n.s.	88.0000	n.s.
Weight on Loom: kg.	38.1788	n.s.	40.8230	n.s.
Final Length: ells/yds	30.0000	30.0000	30.0000	24.0000
Final Length : metres	21.0000	20.6700	21.0000	22.5552
Final Width: ells/yds	2.3750	2.5000	2.0000	1.7500
Final Width: metres	1.6625	1.7225	1.4000	1.6447
No. of Warps	2066.0000	3120.0000	1800.0000	n.s.
Warps per cm (fulled)	12.4271	18.1132	12.8571	n.s.
Final Area in square metres	34.9125	35.6041	29.4000	37.0954
Final Weight in lb.	51.0000	58.0000	52.0000	64.0000
Final Weight in kg	22.1264	27.2165	24.1228	29.0300
Weight per m2 in grams	**633.7658**	**764.4209**	**820.5034**	**782.5753**

	TEXTILE DIMENSIONS AND WEIGHTS: THE LOW COUNTRIES AND ENGLAND IN THE SIXTEENTH CENTURY				
Drapery: City/Region	**HONDSCHOOTE**	**HONDSCHOOTE**	**BERGUES-**	**ESSEX (Colchester)**	**ESSEX (Colchester)**
Date of Ordinance	**1534**	**1534**	**ST. WINOC 1537**	**1579**	**1579**
B. WORSTEDS & HYBRID STUFFS					
Name of Textile	**Small Single Say**	**Large Double Say**	**Narrow Say**	**Says:**	**Bays:**
Additional Names			**Fine**	**broad**	**Single**
Origin of Wools	**Flanders, Friesland**	**Flanders, Friesland**	**Flanders, Artois**	**English:**	**English:**
Wool Types	**Scotland, Pomerania**	**Scotland, Pomerania**	**long-stapled**	**long-stapled**	**worsted warp;**
					woolen weft
Length on Loom: ells/yds	41.0000	36.0000	n.s.	n.s.	n.s.
Length on Loom: metres	28.7000	25.2000	n.s.	n.s.	n.s.
Width on Loom: ells	n.s.	n.s.	n.s.	n.s.	n.s.
Width on Loom: metres	n.s.	n.s.	n.s.	n.s.	n.s.
Area in square metres: on loom	n.s.	n.s.	n.s.	n.s.	n.s.
Weight on Loom: lb.	n.s.	n.s.	n.s.	n.s.	n.s.
Weight on Loom: kg.	n.s.	n.s.	n.s.	n.s.	n.s.
Final Length: ells/yds	40.0000	35.0000	40.0000	10.0000	35.0000
Final Length : metres	28.0000	24.5000	28.0000	9.3984	31.9530
Final Width: ells/yds	0.9375	1.6250	1.0000	1.0000	1.0000
Final Width: metres	0.6563	1.1375	0.7000	0.9398	0.9398
No. of Warps	1600.0000	2300.0000	1400.0000	n.s.	n.s.
Warps per cm (fulled)	n.s.	20.2198	20.0000	n.s.	n.s.
Final Area in square metres	18.3750	27.8688	19.6000	8.8326	30.0294
Final Weight in lb.	11.0000	16.0000	11.0000	2.7500	22.0000
Final Weight in kg	5.1029	7.4224	5.1029	1.2471	9.9790
Weight per m2 in grams	**277.7088**	**266.3342**	**260.3520**	**141.1931**	**332.3073**

Prices of Woollens Manufactured in Italy, the Low Countries, and England: as sold in Italian and Other Mediterranean Markets, 1380 - 1435: sold by the piece (whole cloth of 21 - 36 metres) with number of days wages that a Florentine master mason required for the purchase of one cloth

Dates of Sales	Places of Sales	Places of Manufacture	Textile Type or Name	Rank Order of Value	Value in Florentine Florins	Value in £ sterling 36d/florin	Value of Florin in lira di soldi piccioli	Mean Daily Wage of Florentine Master Mason in soldi	No. Days' Wages to Buy One Cloth
ca. 1380	Naples	**Italy**							
to. 1400	Sicily	Florence	San Martino	lowest	58.540	8.781	76.500	16.458	272.105
		Florence	San Martino	mean	60.740	9.111	76.500	16.458	282.331
		Florence	San Martino	highest	62.930	9.440	76.500	16.458	292.511
		Milan, Como	dyed woollens	lowest	40.000	6.000	76.500	16.458	185.928
		Milan, Como	dyed woollens	mean	43.360	6.504	76.500	16.458	201.546
		Milan, Como	dyed woollens	highest	45.000	6.750	76.500	16.458	209.169
		Flanders							
		Wervik	dyed woollens	mean	26.000	3.900	76.500	16.458	120.853
ca. 1380	Spain	**Florence**	dyed woollens	mean	64.430	9.665	76.500	17.260	285.567
to 1410		**Flanders**							
		Wervik, Kortrijk	dyed woollens	mean	27.900	4.185	76.500	17.260	123.659
		Comines, Menin	dyed woollens	mean	27.900	4.185	76.500	17.260	123.659
		Bruges	dyed woollens	mean	44.010	6.602	76.500	17.260	195.062
		Brabant							
		Brussels	dyed woollens	mean	44.180	6.627	76.500	17.260	195.815
		Mechelen	dyed woollens	mean	44.180	6.627	76.500	17.260	195.815
		England							
		Essex	straits (dozens)	mean	6.120	0.918	76.500	17.260	27.125

Dates of Sales	Places of Sales	Places of Manufacture	Textile Type or Name	Rank Order of Value	Value in Florentine Florins	Value in £ sterling 36d/florin	Value of Florin in lira di soldi piccioli	Mean Daily Wage of Florentine Master Mason in soldi	No. Days' Wages to Buy One Cloth
1390-1402	**Levant:**	**Italy**		**Place/ Date**					
		Florence	woollens lowest range	D: 1390	35.000	5.250	76.500	16.635	160.956
		Florence	woollens medium range	D: 1390	46.000	6.900	76.500	16.635	211.542
		Florence	woollens highest range	D: 1390	54.000	8.100	76.500	16.635	248.332
		Florence	panni di fontego	D: 1390	27.000	4.050	76.500	16.635	124.166
1395	**Levant:**	**Flanders**							
		Wervik	dyed woollens	D: 1395	19.200	2.880	76.500	16.590	88.535
1395	**Levant:**	**Brabant**							
		Mechelen	dyed woollens	D: 1395	38.500	5.775	76.500	16.590	177.532
1394-98	**Levant:**	**England**				**florin/40d**			
		Norfolk/Ireland?	Saia d'Irlanda	D: 1394	4.500	0.675	76.500	16.590	20.750
		Norfolk/ Ireland?	Saia d'Irlanda	D: 1395	5.300	0.795	76.500	16.590	24.439
		Norfolk/ Ireland?	Saia d'Irlanda	D: 1397	6.000	0.900	76.500	16.590	27.667
		Norfolk/Ireland?	Saia d'Irlanda	D: 1398	3.550	0.533	76.500	16.590	16.370
1405-1410	**Levant:**	**England**							
		Worcestershire	Cotswolds	D: 1405	35.000	5.250	76.500	17.820	150.253
		Worcestershire	Cotswolds	D: 1410	14.700	2.205	76.500	17.820	63.106

Dates of Sales	Places of Sales	Places of Manufacture	Textile Type or Name	Rank Order of Value	Value in Florentine Florins	Value in £ sterling 36d/florin	Value of Florin in lira di soldi piccioli	Mean Daily Wage of Florentine Master Mason in soldi	No. Days' Wages to Buy One Cloth
1414-1416	Levant:	**England**							
		West Country	Panni Bastardi	D: 1414	25.000	4.167	80.000	18.160	110.132
		West Country	Panni Bastardi	D: 1414	28.000	4.667	80.000	18.160	123.348
		West Country	Panni Bastardi	D: 1416	20.000	3.333	80.000	18.160	88.106
		Essex	straits (dozens)	D: 1416	6.000	1.000	80.000	18.160	26.432
1436	Levant:	**Flanders**				**40d/florin**			
		Wervik	dyed woollens	C: 1436	28.300	4.717	83.000	19.520	120.333
		Wervik	dyed woollens	C: 1436	22.000	3.667	83.000	19.520	93.545

Place names by initials:

A: Alexandria
C: Constantinople
D: Damascus

No. of Master Mason's Daily Wages (Florence) to buy 1 cloth, 1390 - 1436

Date of Sale	Place of Manufacture	Type of Cloth	Price of Cloth in Gold Florins	No. Days' Wages to Buy One Cloth
1394-98	Norfolk/Ireland?	Saia d'Irlanda	3.550	16.370
1394-98	Norfolk/Ireland?	Saia d'Irlanda	4.500	20.750
1394-98	Norfolk/Ireland?	Saia d'Irlanda	6.000	27.667
1390-1410	England: Essex	straits (dozens)	6.120	27.125
1390-1402	Florence	San Martino H	54.000	248.332
1390-1402	Florence	San Martino L	35.000	160.956
1390-1410	Flanders: Bruges	dyed woollen	44.010	195.062
1395	Flanders: Wervik	dyed woollen	19.200	88.535
1395	Brabant: Mechelen	dyed woollen	38.500	177.532
1405-10	England: Worcs.	Cotswolds	35.000	150.253
1436	Flanders: Wervik	dyed woollen	28.300	120.333

Prices of Hondschoote Says and Ghent Dickedinnen Woollens, compared with the Purchasing Power an Antwerp Master Mason's Daily Wages in pounds and pence groot Flemish, 1435 - 1544

Year	Hondschoote Single Says: Prices in £ groot Flemish	Hondschoote Double Says: Prices in £ groot Flemish	Ghent Dickedinnen Woollens: Prices in £ groot Flemish	Daily Wage of an Antwerp Master Mason in d. groot Flemish*	No. Days' Wages of a Master Mason to Buy a Single Say	No. Days' Wages of a Master Mason to Buy a Dicke-dinnen	Value of the Brabant Basket of Consumables in d. groot Flemish	Value of Single Say in Baskets of Consum-ables	Value of Ghent Dickedinnen Baskets of Consum-ables
1535			14.150	9.750		348.308	268.733		12.637
1536			14.250	10.250		333.659	297.467		11.497
1537			14.500	10.250		339.512	254.333		13.683
1538	0.967	2.278	14.500	11.000	21.098	316.364	295.533	0.785	11.775
1539	0.945	2.184	15.000	12.000	18.900	300.000	300.400	0.755	11.984
1540	0.835	1.961	11.500	12.000	16.700	230.000	291.133	0.688	9.48
1541	0.879	2.015	12.000	12.000	17.580	240.000	278.000	0.759	10.36
1542	0.838	2.005	14.600	12.000	16.760	292.000	293.600	0.685	11.935
1543	0.783	1.775	14.000	13.000	14.455	258.462	324.200	0.580	10.364
1544	0.908	1.942	14.000	13.500	16.142	248.889	351.067	0.621	9.571

No. of Daily Wages (Antwerp master mason) to buy 12 sq. metres of cloth: 1538-1544

Year	Hondschoote single say	Hondschoote double say	Ghent Dickedinnen
1538	13.788	21.401	108.379
1539	12.343	18.808	103.115
1540	10.906	16.888	79.055
1541	11.481	17.353	82.492
1542	10.945	17.267	100.365
1543	9.440	14.110	88.837
1544	10.542	14.866	85.547

Average Prices of English Textiles, Recorded in Retailers' Inventories in pence (d) per yard, in current and constant values, 1578 - 1738

Constant values based upon the mean value of the price indices in the Phelps Brown & Hopkins 'Basket of Consumables' Index for 1660- 1738*

Type of Textile	1578-99: current d per yard	1578-99: constant d per yd	1600-40: current d per yd	1600-40: constant d per yd	1660-99: current d per yd	1700-38: current d per yard
Wool-Based						
Broadcloth	80	138	65	72	56	54
Kersey	32	55	37	41	21	25
Freize	10	17	14	15	22	21
Serge	24	41	22	24	24	19
Baize	21	36	31	34	18	10
Flannel	10	17	10	11	10	15
Stuffs	-	-	12	13	9	9
Linen-Cotton						
Fine Holland	48	83	42	46	41	32
Linen	14	24	20	22	11	13
Blue linen	-	-	12	13	10	10
Osnaburg	6	10	9	10	8	8
Fustian	18	31	12	13	8	10
Calico	16	28	12	13	12	24
Scotch cloth	-	-	15	17	13	10

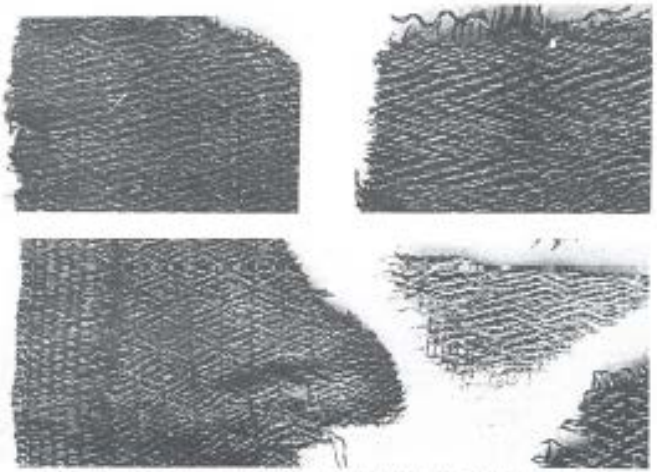
Exports of English Woollens and Worsteds in the Eighteenth Century

CLOTH TYPE	1700 percent	1720 percent	1775 percent	1790 percent
Woollens: Broadcloths	25.4%	28.2%	24.5%	41.5%
Woollens: Narrow Cloths: Kerseys, Dozens, Friezes, etc.	15.8%	14.7%	10.9%	9.0%
New Draperies: Bays, says, serges, stuffs, perpetuanas	58.8%	57.1%	64.6%	49.5%
Total	100.0%	100.0%	100.0%	100.0%
TOTAL VALUE in millions of £ sterling	£2.82	£3.22	£4.91	£5.79

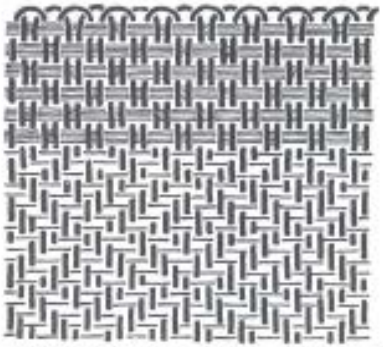
CONCLUSIONS

- 1) **The continental terminologies to distinguish wool-based fabrics by fibre:** are far more useful
- A) **draperies ointes** (**ghesmoutte**): greased
- B) **draperies sèches** (**drooge**): dry; and also ipso facto **=> draperies légères (lichte draperie): light draperies**
- C) **serges:** most common term for **hybrid worsted-woollens** fabrics (as in England): classed with light draperies (above)
- 2) **English fibre terms are deceptive:**
- A) **Worsteds:** Norfolk place name only
- B) **Woollens:** ignores historical transformations from all-combed, all-distaff (rock) spun wools to all carded, all wheel spun wools: but always short-fibred wools

Worsted Fabrics Found at Birka (Sweden) and Norway, 5th - 10th Centuries:



5.2 Various kinds of worsted twill, 'diamond' (lozenge) and 'herring-bone'. Enlarged to twice actual size. Below, pieces of type W10 showing starting border and sideways selvage



5.3 Diagram of the W10 type, 'sharp cut lozenge twill', with starting border.

Worsted Fabrics Found at Birka (Sweden) and Norway, 5th - 10th Centuries:

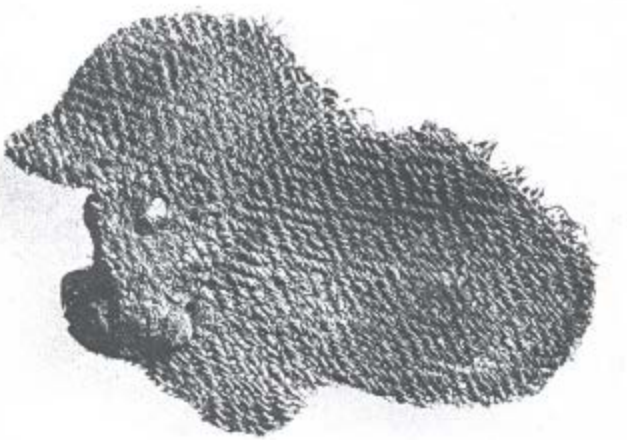
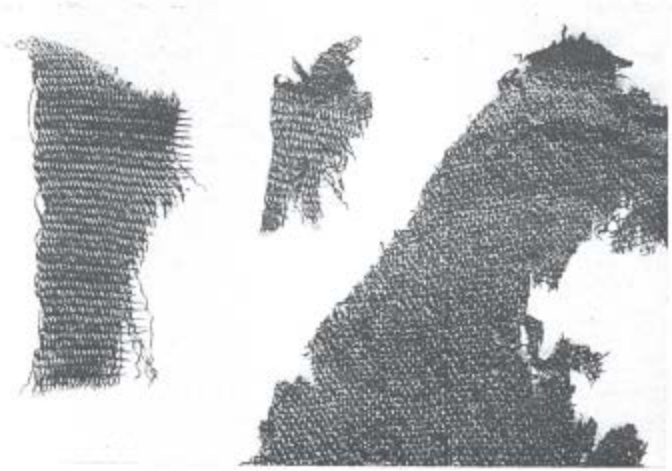


Illustration 3.10 Fine worsted diamond twill of the Birka type from Vinjum, Sogn and Fjordane, Norway [fifth century].

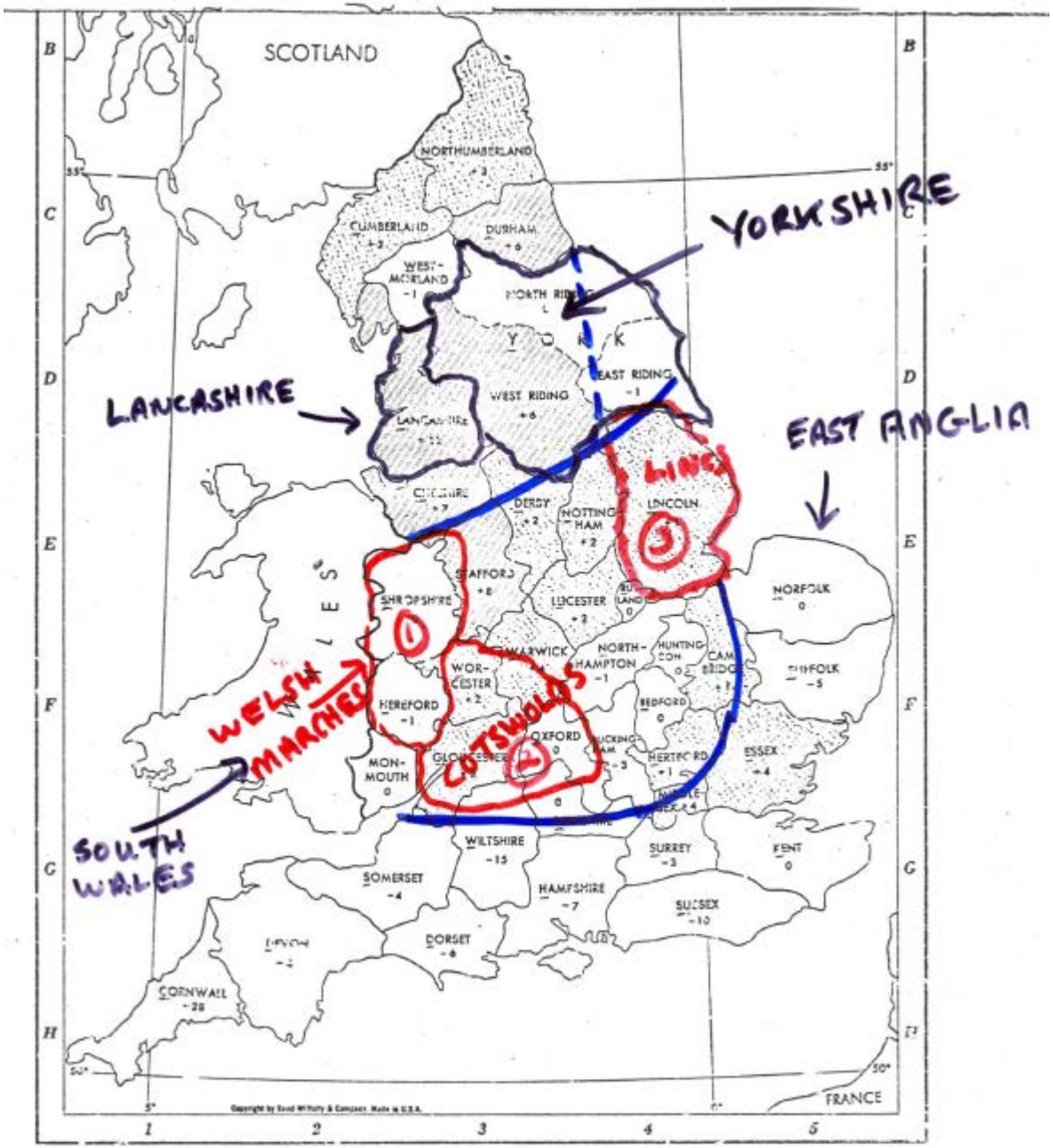


5.1 Plain worsted fabrics, 'tabby weave'. Actual size

Memling: *Adoration of the Magi*

Memling, *Madonna & Child* (1490)

Speaking in Latin, Pope Benedict XVI shocked cardinals with his resignation Monday during what they had believed was going to be an ordinary meeting. L'OSSERVATORE ROMANO/AP


SCOTLAND
NORTHUMBERLAND
CUMBERLAND
DURHAM
WEST-MORLAND
NORTH RIDING
YORKSHIRE
LANCASHIRE
EAST RIDING
WEST RIDING
LINCS
EAST ANGLIA
CHESHIRE
DERBY
NOTTING-HAM
LINCOLN
STAFFORD
SHROPSHIRE
LEICESTER
NORFOLK
WARWICK
NORTH-HAMPTON
HUNTING-DON
SUFFOLK
WOR-CESTER
WELSH MARCHES
HEREFORD
BEDFORD
OXFORD
COTSWOLDS
MON-MOUTH
GLOUCESTER
HERTFORD
ESSEX
WILTSHIRE
SURREY
KENT
SOMERSET
HAMPSHIRE
SUSSEX
SOUTH WALES
DEVON
DORSET
CORNWALL
FRANCE

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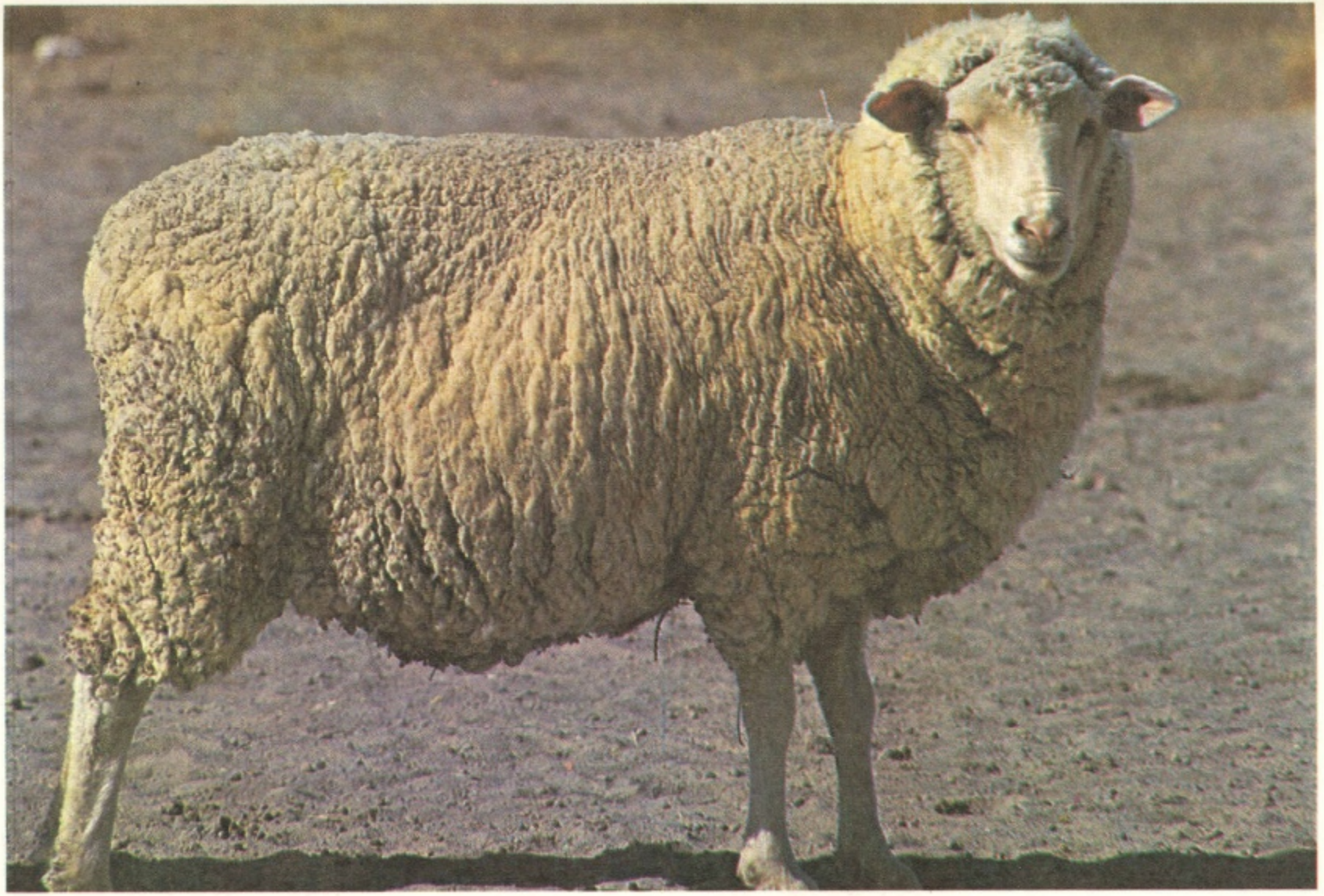

3 Australian Merino Sheep.

A Thousand-Year (& more) Survey of Wool-Based Textiles

- 1) **5th – 11th Centuries: Primacy of Worsteds,** woven on vertical **warp-weighted looms**
- 2) **12th – 13th centuries: Emergence of Woollens and Serges**: with introduction of **horizontal loom**, carding, and spinning wheels (semi-carded woollens by 14th century)
- 3) **14th-15th centuries: Primacy of Woollen Broadcloths**: as warfare + population decline ➔ **raised transaction costs** in international commerce ➔ curtailing trade in cheaper fabrics ➔ reorienting trade to luxury woollens (& silks)
- 4) **16th – 17th centuries: Primacy of New Draperies:** relative peace + population growth + transport innovations ➔ **lowered transaction costs** ➔ promoted revival & growth of international trade in cheaper (& lighter) textiles

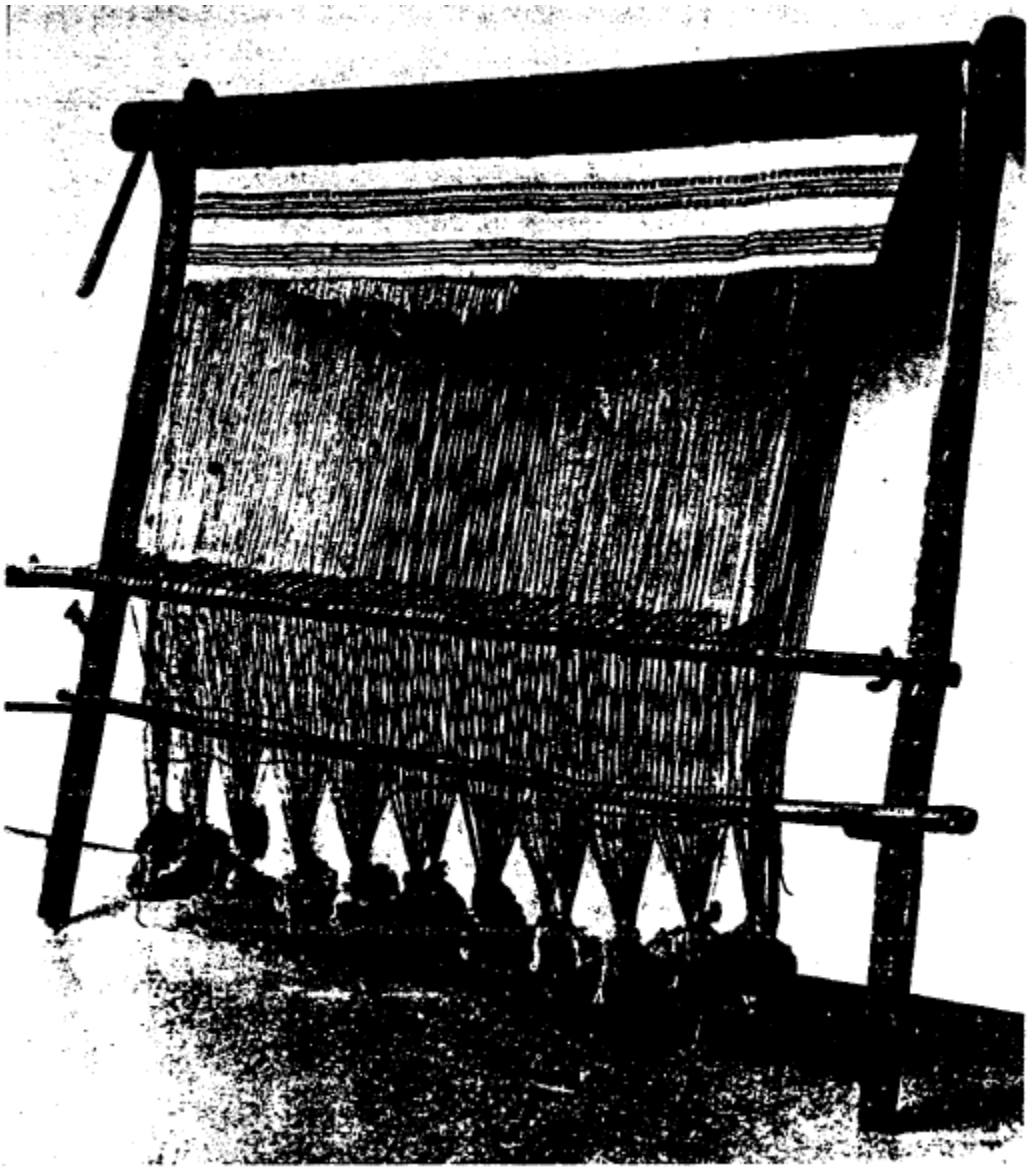

Fig. 20. Lappish loom (No. 2) from Olderdalen, N.Troms. HM, Bergen.

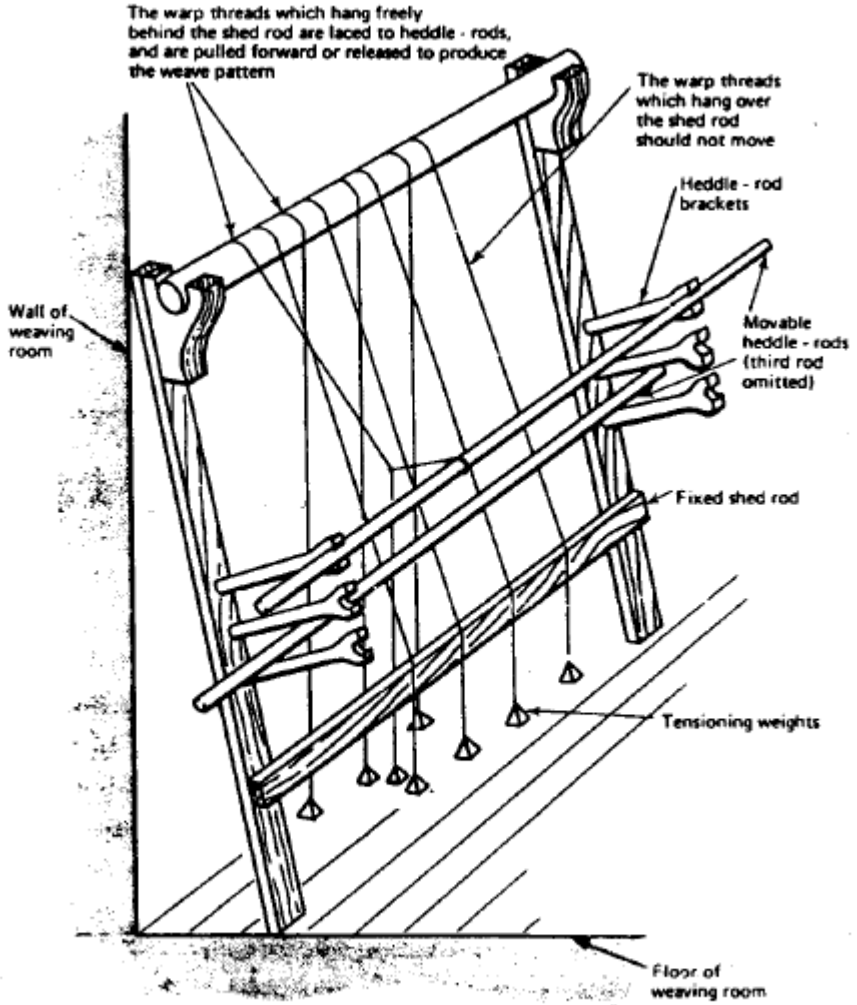

Figure 1.1. The principle of the warp-weighted loom (reproduced from an article by Arthur Haynes in *Textile History*)

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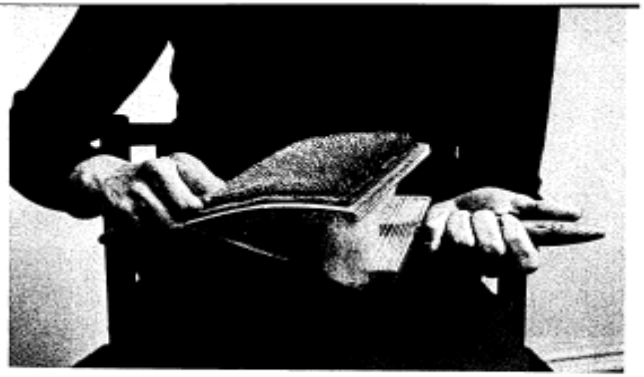
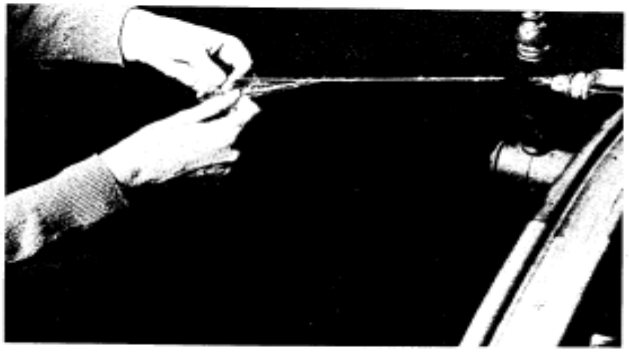


79 Carding (j), the final roll



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80 Woollen spinning (a), joining

81 Woollen spinning (c start of the long draw

Livre des Mestiers: on Spinning

- **Bruges: 1349 manual on crafts in French & Flemish**
- - **Cecile le Fileresse** -- Et elle prise moult rofile qui ful filé à le kenouille; mais le fil que on fila au rouwet a trop de nues. Et elle dist qu'elle waingne pluis à filer estain a le kenouille que à filer trame au rouwet
- - **Cecile de spinnigghe** … soe priis de seer u ghaern dit was ghesponnen metten rocken; maer t' gaeren dat men span metten wiele heeft te vele knoepen. Ende so zeight dat soe windt meer te spinnene werp metten rocke dan te spinnene wevel metten wiele.
- That wheel-spun wefts have too many knots; and that she earns more by spinning [combed] warp on the distaff than by spinning [carded] weft by the wheel.