weaversbazaar Janet Phillips Textile Designer - Hand Weaver

Why worsted? Why Not?

Students of the Janet Phillips Masterclass have been doing research into worsted spun yarns in collaboration with weaversbazaar, who supplied the yarns. The project had the aims of undertaking in depth research into the types of woven fabric most appropriate for the properties of the yarns, and weaving a finished project based on the research done.

What is worsted?

Worsted yarn is most commonly produced from a long staple fleece and it is distinctive because of the way the fibres are prepared for spinning and the actual spinning process. *Worsted preparation* involves combing the longwool fibres several times over ensuring that they all lie parallel to each other. These combed fibres are formed into long 'ropes' called tops. *Worsted spinning* keeps the fibres parallel as they are twisted into a yarn by the spinning process. Handspinners use a short-draw spinning technique to produce a worsted yarn. The result is a firm, hardwearing yarn, usually with a high level of twist, which has been traditionally used for weaving furnishing fabrics, carpets, outer clothing material and for tapestry weaving. Worsted wool has been produced for over six centuries and in the mystical world of wool counts it has its own system: the Worsted Count (WC)[1].

Fig. 1 Huck Lace Curtain

A past glory?

Worsted yarn is said to have originated in East Anglia, possibly even in the village of Worstead and the surrounding area, in the mid fourteenth century. Traditionally woollen cloth was finished through a process known as 'fulling', which used fast flowing streams to drive fulling mills. Fulling causes the cloth to shrink and slightly felt ready for use. Because the East Anglian landscape had no hills to create the fast flowing streams, the distinctive worsted preparation and spinning process

[1] The original Bradford Worsted Count (WC) is where a count of 1 is a single strand of worsted yarn that measures 560 yards (the amount that could be wound on to a single bobbin in the old mils) and is 1 pound in weight


Fig 5. Tote Bag

evolved so that the resulting cloth, also called worsted, would not require fulling. The production of worsted yarn and worsted cloth in East Anglia dominated the worsted trade for four hundred years.

In the late 1700s a new fibre started to appear in Britain – cotton. The demand for cotton was insatiable. Manufacturing innovations, developed during the industrial revolution to feed this demand, enabled all aspects of fibre processing to be dramatically scaled up. It was not long before the techniques used for producing cotton were also being used to spin and weave worsted wool. As water was a key component of these technological advancements it caused the worsted industry to shift from East Anglia to Yorkshire, Scotland and Somerset.

However, by the late 1900s the dominance of oil-based synthetic fibres had driven the wool industry – both in the UK and across the world – into decline. The production of fleece had become unviable and farmers had turned to more lucrative markets. The quality long stapled wool and the skills needed to produce a good worsted yarn were disappearing and consequently the worsted spinning industry in Britain reverted to a cottage industry. Some of the remaining mills from the UK's former glorious wool industry will spin worsted but only as a specialist order of more than 450kg and the fleeces used are unlikely to be British. What a tragedy, when the use of worsted yarn can result in stunning cloth – as the students on Janet Phillips' Masterclass in Weaving found out when they started to explore its potential.

Understanding your yarn

If a yarn is labelled worsted it should have certain characteristics: it should be firm, hardwearing and have a high level of twist. The distinctive worsted preparation enables these yarns to be spun very fine, in which case they will be lightweight and reasonably cool to wear. The amount of twist put into a yarn during the spinning process can change these inherent characteristics. Worsted spun


Fig 3. Dinning Room Chair seat cover

yarns are normally plied for both knitting and weaving. Because of the variable qualities of both the yarn and the resultant fabric the designer needs to develop sensitivity to the raw material.

The Project

The three types of plied worsted yarns used had the following counts: 18/2 nm (9,000 metre per kilogram), 8/2 nm (4,000 metres per kilogram) and 6/2 nm (3,000 metres per kilogram)[2]. They have a very distinct visual appearance. They all have a subtle sheen. They are all slightly hairy. They all have a tighter than average balanced twist[3].

Fig. 4 Cushion Covers

Each student was given 250 grams of 18/2 nm, 8/2 nm or the 6/2 nm yarn and the simple task of weaving sett samples in plain weave and 2/2 twill weave structures, as the first step to establishing what types of fabric could be woven with these yarns. They wove three setts in each weave structure: a slightly loose sett; an average sett and thirdly with a firm sett (see Appendix 1 for details). Four metres of warp was put onto the loom, threaded with a straight threading and initially sleyed and woven at the loose sett. Particular attention was paid to weaving an accurate number of picks to ensure a balanced square sett was woven. A square of cloth was woven in both plain weave and 2/2 twill before the warp was cut, in front of the reed, and then re-sleyed to a closer sett. Again an accurate square of cloth was woven in this new sett in both plain weave and 2/2 twill. The whole process was then repeated with an even closer sett. All cloths were measured in width and length before washing to record any shrinkage.

The project highlighted the impact that sett has on the handle, drape and finished quality of a fabric and that the end use of the fabric should determine the correct sett to use for any given project.

[2] 18/2nm is equivalent to 2/16 WC with 4480 yards per lb, 8/2nm is equivqlent ot 2/7 WC with 1960 yards per lb, 6/2nm is equivqlent to 2/55 WC with 1540 yards per lb.

[3] 18/2: 9.87 twists per inch on singles and on the ply. 8/2 and 6/2: 4.95 twists per inch singles; 3 twists per inch plied.

Impact of the project

All the students really liked the worsted yarn, which was easy to use. No breaks occurred in the warp and the yarn dyed well with acid dyes. Scissors were needed to cut the yarn as it was difficult to break with the hands.

The wraps per inch given by the producer were considered to be very low in respect of the good average setts that our research found.

There was normal take up during weaving on both plain weave and twill setts (about 10%) but virtually no shrinkage on finishing.

Finishing was done both by hand washing and in a washing machine using a 40°C wool wash. Both types of finishing caused a 'crazing' effect to occur on the plain weave cloths no matter how tight the sett was. Crazing occurs when the tightness of the twist in a thread causes a plain weave structure to shrink irregularly. It is an easy way of designing a 'crepe' fabric. The 'crazing' effect was lessened with hand washing. The samples softened slightly on washing. It was felt that machine spin-drying creased the fabrics and they would have been better drip dried and then ironed. The fabrics did not felt even after boiling and agitating the material.

Fig. 5. Sett of Table Mats

The overall conclusion was that the worsted yarns were all ideal for furnishing and interior fabrics as well as coating and suiting fabrics for clothing, although they would not be suitable for clothing worn next to the skin. The crispness and sheen of the finished cloths meant that weave structures were clearly visible.

Following the results of the basic sett samples the students were able to decide what type of finished items they could weave. They all decided to weave functional furnishing fabrics. These included a simple four-shaft huck-lace curtain (Fig 1), a sturdy tote bag in various eight shaft twills (Fig 2), dining room chair covers also in eight-shaft twills (Fig 3), two weft-faced plain weave cushions (Fig 4) and a set of tablemats (Fig 5), which combined the classic four-shaft herringbone twill with a textured, four-shaft herringbone

twill. A further project has since been undertaken by other Masterclass students, weaving cloths combining the different weights of weaversbazaar yarns. The most noticeable conclusion was that the three yarns shrink at different rates and therefore add texture to resultant woven cloths.

The future

So, why worsted and why this project? What the project shows is that good worsted yarn has qualities and uses that earn it a place in the future of handweaving, tapestry and contemporary textiles. The yarn used in this investigation is spun outside the UK from fleeces sourced mainly from New Zealand and, in some case, South America. The skills and capabilities in the UK to produce worsted yarn are nearly extinct — but not quite. However no skill will endure without being utilised. So we want to raise the profile of good worsted yarn, encourage makers to try it and to explore how it can be used — if you like it, keep using it! For it is only through stimulating interest that the commercial value of re-establishing the production of a viable UK worsted industry will be evident. This means rearing enough of the right sheep to give the pure white, long staple fleeces and having enough demand for the yarn to justify the mills routinely turning over their equipment to worsted spinning. Why worsted? Why Not?

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For details of Janet Phillips Weaving Masterclass visit www.janetphillips-weaving.co.uk/masterclass.php

To see the full range of worsted and other yarns available from weaversbazaar visit www.weaversbazaar.com

Appendix 1

RESULTS: 18/2nm (2/16wc) – 9000m/kilo (4480yards/lb); Weavers Bazaar wraps per inch figure - 40

Plain Weave

Finish	Sett	C o
40^{0}C	**2**	Too loose unless the end use dictates it. ie light unlined curtains
40^{0}C	**2**	Good balanced drape. Could be used for cushion covers and
40^{0}C	**3 0**	Suitable for heavier weight fashion fabrics or upholstery. Lined jackets, cushion covers and lined curtains. **Good average sett**

2/2 Twill

Finish	Sett	C o
40^{0}C	**2**	Too loose unless the end use dictates it. ie light unlined curtains
40^{0}C	**2**	Good balanced drape. Could be used for cushion covers and
40^{0}C	**3 0**	Suitable for heavier weight fashion fabrics or upholstery. Lined jackets, cushion covers and lined curtains. **Good sett but probably 32 epi would be better, or even 36epi**

Table 1

RESULTS: 8/2nm (2/7wc) – 4000m/kilo (1960 yards/lb): Weavers Bazaar wraps per inch figure – 30

Plain Weave

Finish	**Sett**	**C**
40^{0}C	**1**	Loose but still usable. Curtains.
40^{0}C	**1**	Good drape. A lot of 'crazing'. Suitable for lightweight
40^{0}C	**2 0**	**Good average sett.** Overall a very stable cloth but still flexible. A lot of 'crazing'. Suitable for
40^{0}C	**2 4**	Very tight, crisp and rigid. Lays very flat. Less 'crazing'. Suitable for bags/ dining room chair covers, table mats and upholstery.
40^{0}C	**2**	Unable to get 28 picks per inch in.

2/2 Twill

Finish	Sett	C
40^{0}C	**1**	Very loose. Curtaining possibly
40^{0}C	**1**	Slightly loose. A lot of movement. Ok perhaps for blanket/sofa throws.
40^{0}C	**2**	**Good average sett**. Flexible and stable not too stiff. Suitable for coat
40^{0}C	**2 4**	Firm and crisp. Lays flat. Beautiful fabric, clearly showing twill weave structure. Still flexible. Table Mats/upholstery. **Good**
40^{0}C	**2**	Very rigid, solid cloth. Weave structure clear.

Table 2

RESULTS: 6/2nm (2/5wc) – 3000m/kilo (1400 yards/lb): Weavers Bazaar wraps per inch figure – 18

Plain Weave

Finish	Sett	C o
40^{0}C	**8**	Too loose for general use. Could be used for hangings.
40^{0}C	**1**	Good drape. Could be used for lightweight furnishings or
40^{0}C	**1**	Lovely balanced drape, suitable for medium weight fashion fabrics.
40^{0}C	**1**	Strong cloth with a little drape after finishing, suitable for soft
40^{0}C	**1**	A firm cloth suitable for soft furnishing or a structured bag.
40^{0}C	**1**	Impossible. A very solid fabric almost impossible to beat 18 ppi in.

2/2 Twill

Finish	Sett	C o
40^{0}C	**8**	Too loose for general use. Could use for hangings.
40^{0}C	**1**	Suitable for lightweight furnishings, such as cushions.
40^{0}C	**1**	Firm, close fabric. Could be used for furnishings such as place mats.
40^{0}C	**1**	Soft furnishings and unstructured bags. Softer than plain weave at this
40^{0}C	**1**	Soft enough to have a little drape suitable for a structured bag or
40^{0}C	**1**	Very solid with no drape suitable for hardwearing upholstery but no

Table 3