4. Design and fabric development

4.1 Introduction

This final chapter concentrates on the work of the woven fabric designer as a creator of commercially acceptable and economically produced fabrics. It deals with the role of designers in an ever-changing world and the considerable financial and commercial restraints under which they must work.

It covers section blanket making and how designs are created and coloured, and what pitfalls can be avoided during their manufacture. It is hoped that the various section blanket design and colour layouts are self-explanatory and that some imagination can be used to convey the impression of colour from the written word.

CAD and the link of CAD to CAM has been intentionally excluded in this publication. It has been my experience that the success of CAD is in direct proportion to the practical cloth making skill, imagination and colour sense the user puts into it. It is doubtful that any CAD system will compensate for shortfall in the above-mentioned qualities.

4.2 The role of the woven fabric designer

In an ideal business world woollen and worsted woven fabric manufacturers would only produce and sell simple cloths in long production runs, using the fewest possible number of yarn qualities, yarn counts, yarn colours, designs, colourways, drafts and peg plans. Most manufacturers today already have the most modern and efficient looms, ideally suited for this kind of work.

However, in the real business world of today, there is a major problem for such manufacturers. The long production runs referred to are becoming harder to come by with every passing year and to make matters worse; they are being replaced by increasing numbers of smaller and more fragmented orders. These are much less economical to produce and far from ideal for present day high-speed looms.

The woven fabric designer of today stands at the centre of the conflict of interests between fabric manufacturer and garment maker. His or her expertise directly influences success or failure in handling this critical situation. Fashionably acceptable and saleable designs and fabrics have to be developed on an ongoing basis for presentation to customers, but in a way that minimises the number of yarn counts, yarn colours and section blankets. In other words creative designing has to be carried out successfully within considerable commercial restraints.

If fewer yarn counts and yarn colours are used in making a collection, this will lead to larger dye lots and spinning batches per colour. Also if the designer uses common warps and common drafts as frequently as possible in section blankets, economies will be made by adding together smaller orders for sample lengths and/or pieces thereby making longer production runs. Such restraints will help to reduce the tendency to make more and more section blankets, designs and colourways that only lead to larger numbers of small orders.

The following suggestions show how this is possible and should encourage designers to produce successful collections whilst keeping the aforementioned comments in mind.

Yarn counts and qualities:

Table 4.1 Menswear fabrics in 2/52 nm worsted yarn

Weave	Ends, picks/cm (in loom)	Approx. weight in grammes/linear metre
Plain weave	20.5	275
2/1 twill	24.0	325
2/2 twill	26.5	360

Table 4.2 Womenswear fabrics using 8.5 nm Shetland yarn

Weave	Ends, picks/cm (in loom)	Approx. weight in grammes/linear metre
Plain weave	8.0	300
2/2 twill	8.5	345
3/3 twill	9.0	375

It is worth stating that any one yarn count can make at least three completely different fabrics – more if combined with other yarns. Each of the three fabrics will have a different weight, weave, density, drape, handle, selling price and end use, tables 4.1 and 4.2 show basic examples.

Yarn colours:

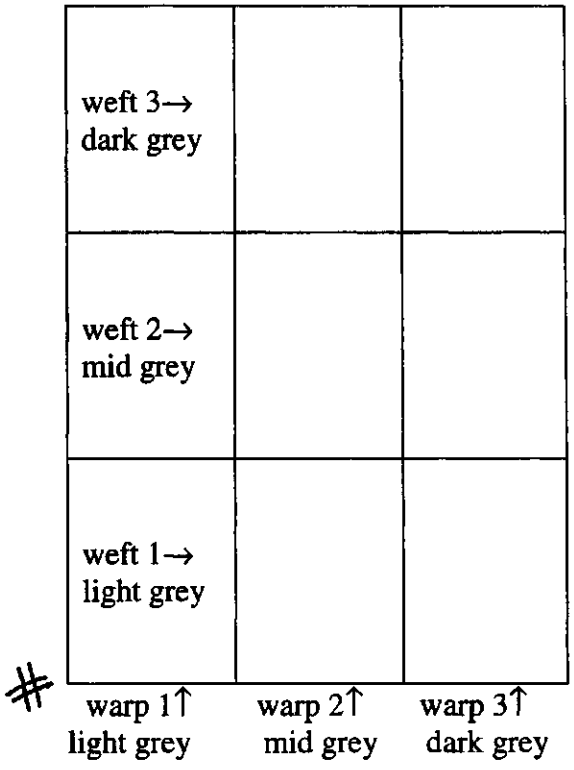
It is essential to have a comprehensive and well-balanced selection of running colours in each yarn count. A limited number of carefully chosen colours will give the designer more scope than a larger number of ill-assorted ones.

For example, in a basic colour of grey, three evenly graded tones from light through to dark might be sufficient. They could be used to give a wide spread of tones (or depths) in woven cloth form. In a three section blanket apart from the three 'true' or perfect tones where the same yarn colour is used warp and weft, there will also be crossings. These occur when warp and weft colours are different thereby giving other combined tones or depths and there could be as many as five different, evenly graded tones of grey fabric using only three basic grey yarn colours as illustrated in figure 4.1. If the same three gradations in tone are repeated in ground colours of say brown, blue, olive and burgundy, then light grey, light brown, light olive and light burgundy will be the same tone or depth. The same will apply to medium and dark tones.

In addition to these basic ground colours a limited number of decoration yarn colours (for stripes and overchecks) such as tan, red, turquoise, gold and emerald in light medium and dark tones, plus white and black, could complete an effective yarn string of thirty-two running colours.

The number of running colours in each yarn count has to be constantly monitored and whenever new colours are added others must be dropped at the earliest opportunity, in order to keep the total number of running colours under control.

Section blanket design & colour layout



Warp 1 crossed with weft 1 would give: solid light grey

Warp 1 crossed with weft 2 would give: light grey/mid grey

Warp 2 crossed with weft 2 would give: solid mid grey

Warp 2 crossed with weft 3 would give: mid grey/dark grey

Warp 3 crossed with weft 3 would give: solid dark grey

4.1 Five shades of grey fabric from three shades of grey yarn

Selected crossings light grey/mid grey and mid grey/dark grey have the lighter of the two greys in each pair in warp and the darker in weft. One might think that both crossings could have been selected on the same or common warp – mid grey/light grey and mid grey/dark grey but the lighter of any pair of colours will always look better in the warp.

The importance of selecting the 'right' ones from pairs of 'opposites' which appear in section blankets made with weft colours as warps is explained more fully later on.

The five greys selected from this section blanket will run evenly in tone from light grey through to dark grey. The addition of a black weft in this blanket across the dark grey warp would give a sixth similarly graded grey if so desired.

01	light grey	17	mid tan
02	mid grey	18	dark tan
03	dark grey	19	light red
04	light brown	20	mid red
05	mid brown	21	dark red
06	dark brown	22	light turquoise
07	light blue	23	mid turquoise
08	mid blue	24	dark turquoise
09	dark blue	25	light gold
10	light olive	26	mid gold
11	mid olive	27	dark gold
12	dark olive	28	light emerald
13	light burgundy	29	mid emerald
14	mid burgundy	30	dark emerald
15	dark burgundy	31	white
16	light tan	32	black

As decoration colours are mostly used sparingly they can be package dyed in smaller lots.

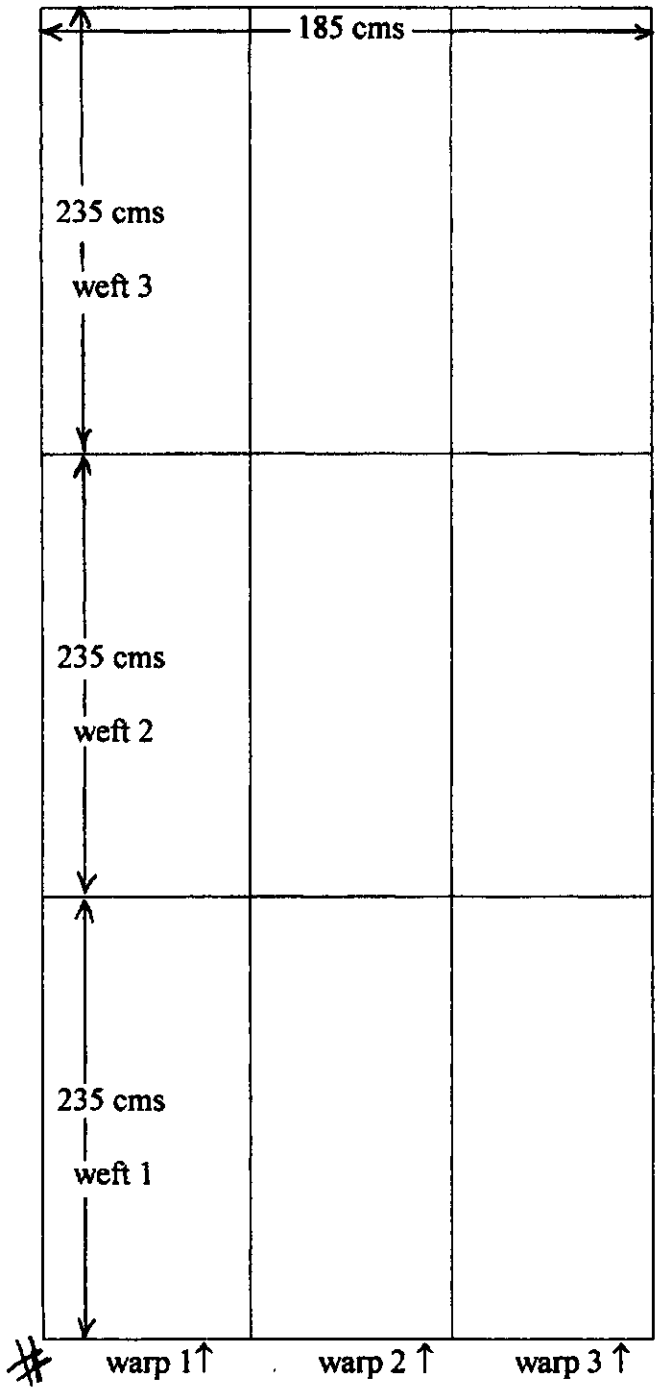
4.3 Section blanket making

Section blankets are a necessary evil in woven fabric manufacture and very costly to produce. They are the means of developing design and colour ideas as well as material for making swatches and mill references. There are perhaps as many different types and sizes of section blankets as there are woven manufacturers, but only two basic types are dealt with here.

The first type has a limited number of warps and wefts but provides sufficient pattern material for the purposes described above. It is usually ten metres warp length, with three warps and three wefts, or perhaps four warps and four wefts. Warp 1 and weft 1 might be in tones of grey, warp 2 and weft 2 in similar tones of brown and warp 3 and weft 3 in similar tones of say blue, olive or burgundy. Alternatively, warp 1 and weft 1 might be in one design, warp 2 and weft 2 in another design with warp 3 and weft 3 in yet another design. The yarn colour combinations in each of the three different designs might be different tones of the same colour – say light grey, medium grey and dark grey – the design and colour combinations are many.

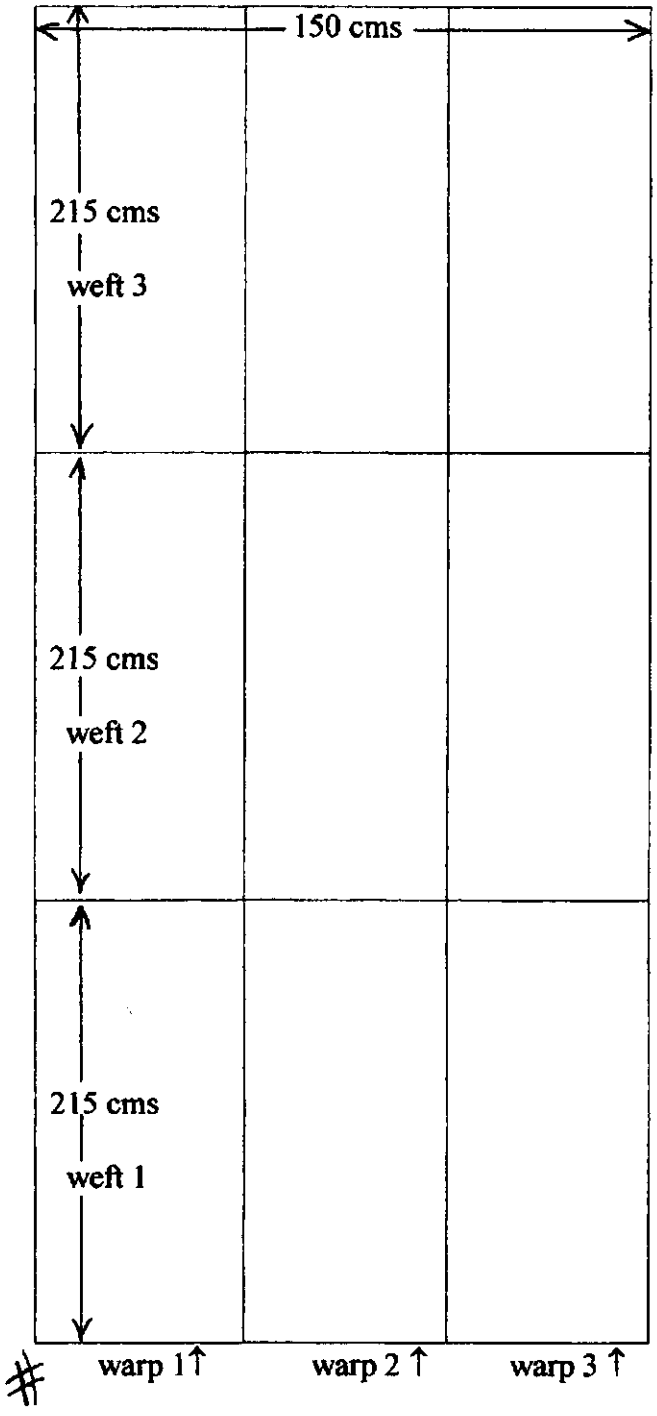
This type of section blanket allows the designer only one chance to get the design effect and colourings right in sufficient numbers of colourways worthy of selection for swatching etc. However when this method is successful most of the section blanket is usable with little or no wasted material. The designer unfortunately gets little opportunity to experiment with unusual weaves, designs and yarn colour combinations because if they do not work out successfully many of the colourways unworthy of selection will be consigned to the waste bag and this can represent a substantial financial loss.

Figure 4.2 shows suggested 'in-loom' particulars for a three warp, three weft section blanket, figure 4.3 the likely 'finished' dimensions of the same and figure 4.4 illustrates how any one of the nine equal-sized sections might be utilised for swatching etc.



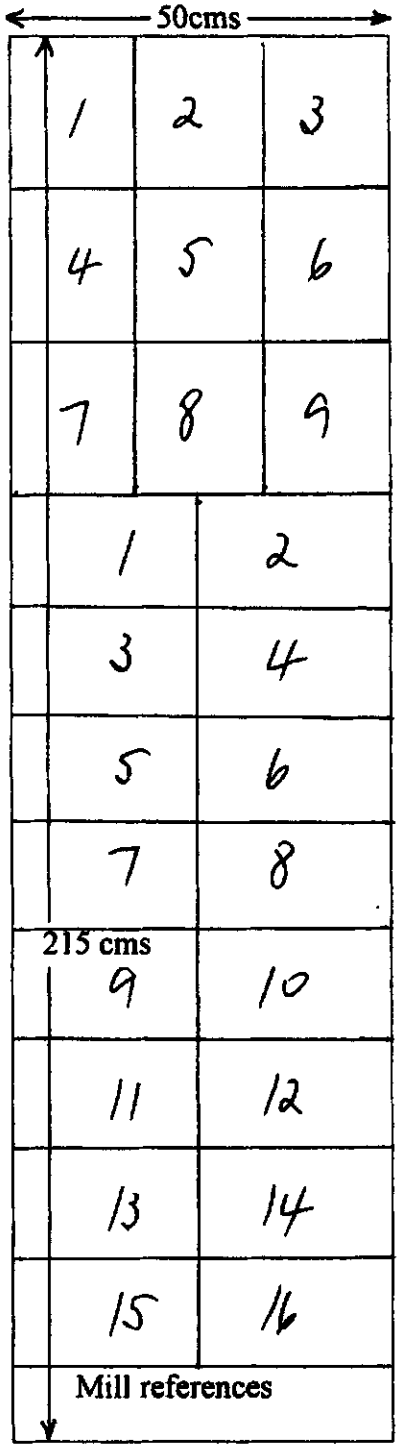
10 metres warp,
7 metres woven length (approx)
3 warps, 3 wefts

4.2 'In-loom' dimensions for a three warp, three weft section blanket



7 metres woven length (approx),
6.5 metres finished length (approx),
3 warps, 3 wefts

4.3 'Finished' dimensions of a three warp, three weft section blanket



This provides: 9 – 16cms (wide) x 23cms (long) swatches for reps etc.,
16 – 23cms (wide) x 16cms (long) clips for customers' requests, plus
mill reference pattern material.

4.4 Pattern material available from one section of a three warp, three weft blanket

The second type of section blanket is a completely different proposition. The overall 'in-loom' and 'finished' dimensions might be the same as in the previous type but it could contain up to ten warps and twenty wefts. Naturally each colourway section will be too small for swatching purposes but it allows the designer to combine different weaves, designs and colour combinations and hopefully come up with some unusual and exciting patterns. Unforeseen and accidental crossings can look very new and attractive and might be chosen by the designer for further development in a three warp, three weft version. Any solitary and exciting design or colourway discovered in this way can have two or three others added and re-issued in the other form of section blanket, in the fairly certain knowledge that at least four or five colourways of sufficient pattern material will be forthcoming.

The required number of these random section blankets (ten warp, twenty weft types) will vary from one company to another. Relatively few will be needed for an established fabric quality in order to provide an exciting and adequate collection.

When making section blankets for swatching material there will always be a certain amount of unavoidable waste. This is because 'opposites' are present in section ranges with weft colours as warps and this problem is illustrated in figure 4.5. The three 'true' or solid colourways where warp and weft yarns are the same colour will be selected for swatching, plus one or other of the three pairs of 'opposites'. These 'opposites' consist of 50% of one colour (warp) and 50% of another colour (weft). One of the 'opposites' might have light grey warp and light fawn weft, whilst the other will have light fawn warp and light grey weft, and though technically they are identical one will always look better than the other and that will be the one selected for swatching. The twin or 'opposite' will be consigned to the waste bag.

Therefore out of a total of nine colourways in the blanket, five or six at most will be considered different enough to each other and worthy of selection – the remaining three or four will be unavoidably discarded.

Swatches are the means whereby customers are tempted to buy and in doing so, made to feel they have selected the 'right' designs and colours. A wide assortment of designs, colours and themes to select from can confuse the customer and give the feeling that there is no message or authority in the collection they are being shown.

A successful collection is the product of extensive research into such things as what sold well the previous season and why; what types of designs and colours would be the natural progression of what has gone before and how they can be developed, along with what current fashion trends are. Even the familiar saying in industry of 'what sold well last season – but different' has some credibility.

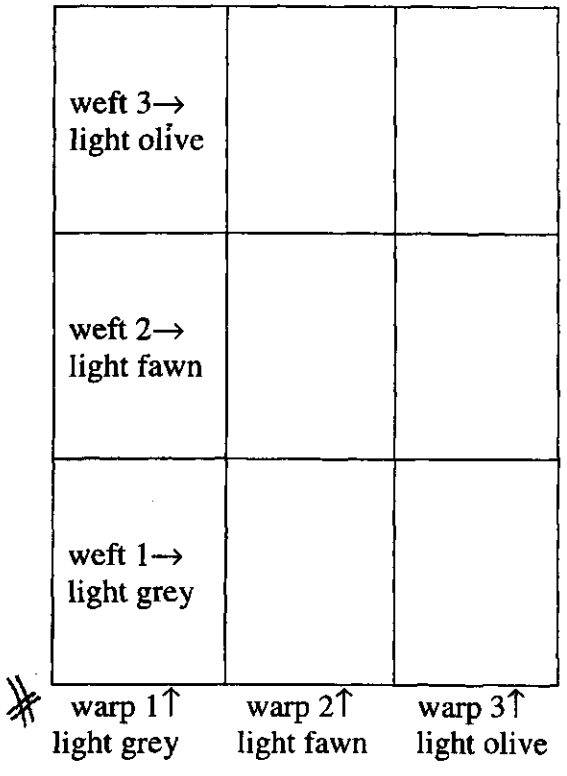
Designers nowadays travel quite extensively, visiting trade fairs, markets and customers all over the world. They have the opportunity to see for themselves what people buy and wear in these places and what the next fashion trend might be.

Thorough research is necessary before building a seasonal collection but one should always keep in mind the most suitable and economically viable fabrics and designs the manufacturer would actually prefer to make and include them as well.

The interests of the fabric manufacturer however need not stand in the way of innovative designing but can be observed by using more 'common warps' and 'common drafts', fewer yarn colours which will lead to bigger spinning and dyeing batches and most importantly of all – fewer section blankets.

Most fabric manufacturers will have a hit list of sorts that will show how many pieces must be ordered to cover the cost of each section blanket made. Those who do not abide by such a list might find out too late that they do not possess the manufacturing capacity to cope with the number of pieces required for what is an unjustifiably large number of section blankets.

Section blanket design & colour layout



4.5 Unavoidable wastage in section blanket making

Assume weft colours are exactly as warp, that is warp 1 and weft 1 are light grey, warp 2 and weft 2 are light fawn and warp 3 and weft 3 are light olive. All three colours are the same tone or depth. When the section blanket is woven and finished colourways are then selected for swatching.

Warp 1 crossed by weft 1 = solid or 'true' light grey.
Warp 2 crossed by weft 2 = solid or 'true' light fawn.
Warp 3 crossed by weft 3 = solid or 'true' light olive.

Warp 1 crossed by weft 2 = light grey warp with light fawn weft)
Warp 2 crossed by weft 1 = light fawn warp with light grey weft) opposites

Warp 1 crossed by weft 3 = light grey warp with light olive weft)
Warp 3 crossed by weft 1 = light olive warp with light grey weft) opposites

Warp 2 crossed by weft 3 = light fawn warp with light olive weft)
Warp 3 crossed by weft 2 = light olive warp with light fawn weft) opposites

The three solid colourways would be selected as well as *one or other* of the three pairs of 'opposites', making a total of six colourways selected for swatching. The three rejected 'opposites' would go into the waste bag as unavoidable waste.

4.4 Section blanket design and colour layouts

Figures 4.6 to 4.12 inclusive are examples of simple design and colour layouts. They are basic designs that can be coloured up in many different ways. They also serve as a reminder that whilst new designs are always worth pursuing, simple and traditional ones can be made to look new and exciting by the imaginative use of colour.

In any section blanket of this type the designer should try to insert at least three different colour combinations of the same depth (or tone), strength of contrast and intensity of colour in each design. This will ensure that when the section blanket is woven and finished, it will be possible to select four or five equally balanced colourways which will sit comfortably side by side in the same swatch.

Figure 4.6 shows how this simple herringbone design should be coloured so that the contrast between warps and wefts is sufficient to show the herringbone effect. In this example six colourways would be possible selections out of a total of nine which means very little wastage occurs.

When there is a contrast in colour between warp and weft it is always preferable to have the lighter tone in the warp and the darker in the weft, rather than the other way round.

A good example of how wasteful a badly planned design and colour layout might be is given in figure 4.7. Only three colourways out of a total of nine would be worthy of selection, with the other six consigned to the waste bag. Care must be taken when colouring up any design so that the maximum number of colourways can be obtained with the minimum amount of waste.

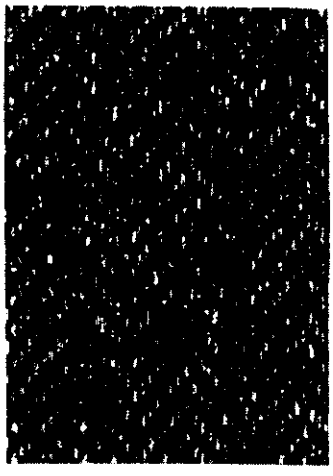
The simple colouring arrangements of the classic 4 and 4 dogtooth design in black and white, and various grey combinations are shown in figure 4.8. There are possibly six colourways suitable for swatching.

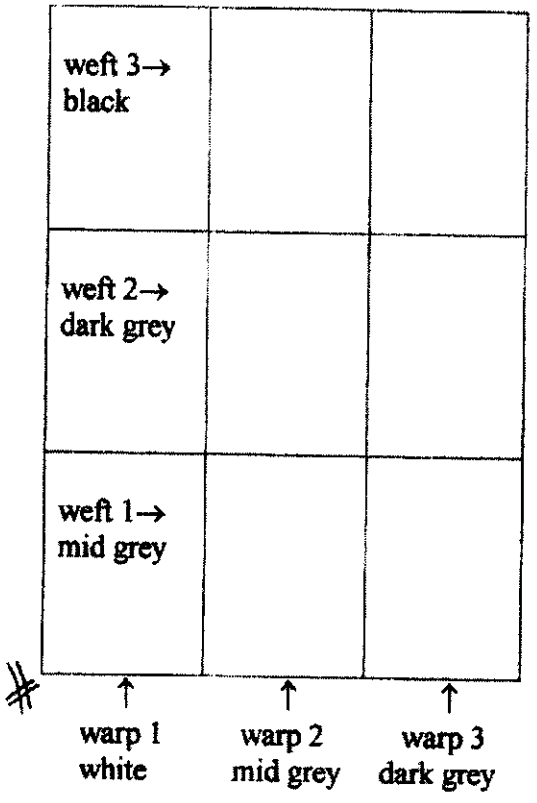
Another colouring of the same dogtooth design in a 4 and 4 gunclub arrangement is featured in figure 4.9. It is shown in tone on tone colourings of grey, brown and burgundy but it can be coloured up in many different ways. For example, bright decoration colours might be used in place of the mid tones, or the mid and dark colours could be substituted with contrasting colours such as red and tan, blue and green, tan and green etc. Light tones in the originals might be replaced with mid tones, mid tones with light and the dark tones remaining as they are, to give mid ground colours with light and dark alternating. The colouring permutations are considerable.

Figure 4.10 shows a 2 and 2, 4 and 4 gunclub colouring arrangement of a typical glen (or Prince of Wales) check in common twill weave. Note the extra number of picks in the 2 and 2 section of the weft set-in. This is intended to ensure that the design will appear slightly elongated in the weft and therefore smarter, rather than square and squat as would be the case if warp and weft set-ins were the same.

There is no authentic Prince of Wales check as there are authentic District checks or tartans. It is an alternative name given to a type of glen check design much favoured by the previous Prince of Wales in the days before he became known as the Duke of Windsor.

Section blanket design and colour layout





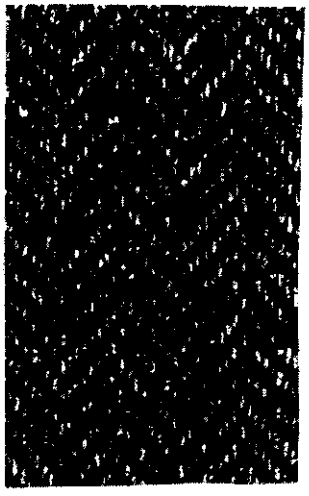
4.6 Contrasting warp and weft showing herringbone design effect.

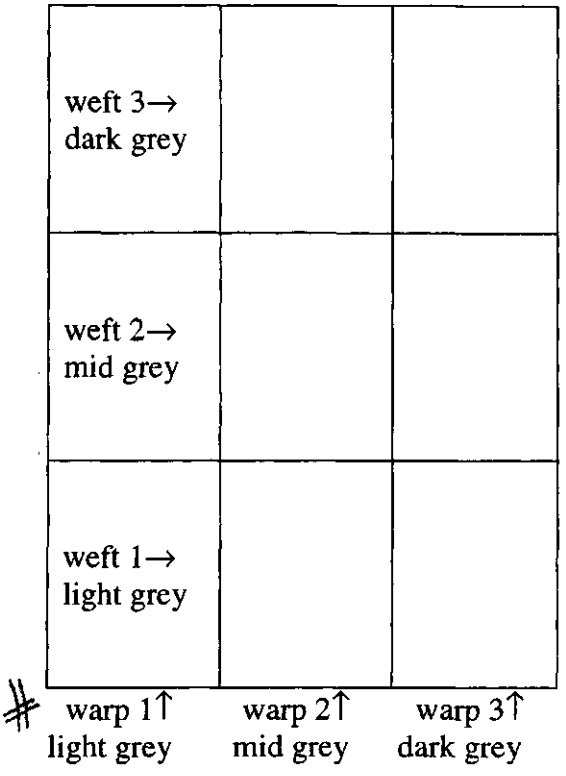
Warp 1 (white) crossed by	weft 1 (mid grey)	= possible selection
1	weft 2 (dark grey)	= possible selection
1	weft 3 (black)	= possible selection
Warp 2 (mid grey) crossed by	weft 1 (mid grey)	= herringbone does not show
2	weft 2 (dark grey)	= possible selection
2	weft 3 (black)	= possible selection
Warp 3 (dark grey) crossed by	weft 1 (mid grey)	= not considered*
3	weft 2 (dark grey)	= herringbone does not show
3	weft 3 (black)	= possible selection

* It is always preferable to have the lighter tone in the warp rather than weft, not the other way round as in this example.

The maximum number of colourways considered worthy of swatching in this section blanket are three from the white warp, two from the mid grey warp and only one from the dark grey warp.

Section blanket design and colour layout





4.7 Only three colourways show the herringbone design effect.

Warp 1 (light grey) crossed by weft 1 (light grey) = herringbone does not show
1 weft 2 (mid grey) = possible selection
1 weft 3 (dark grey) = possible selection

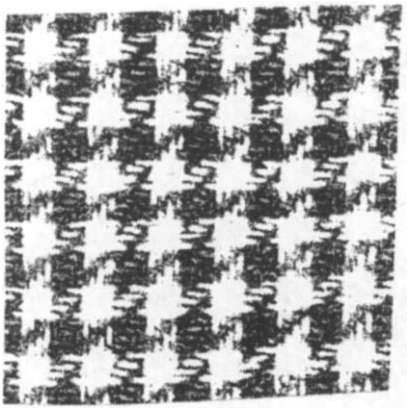
Warp 2 (mid grey) crossed with weft 1 (light grey) = not considered*
2 weft 2 (mid grey) = herringbone does not show
2 weft 3 (dark grey) = possible selection

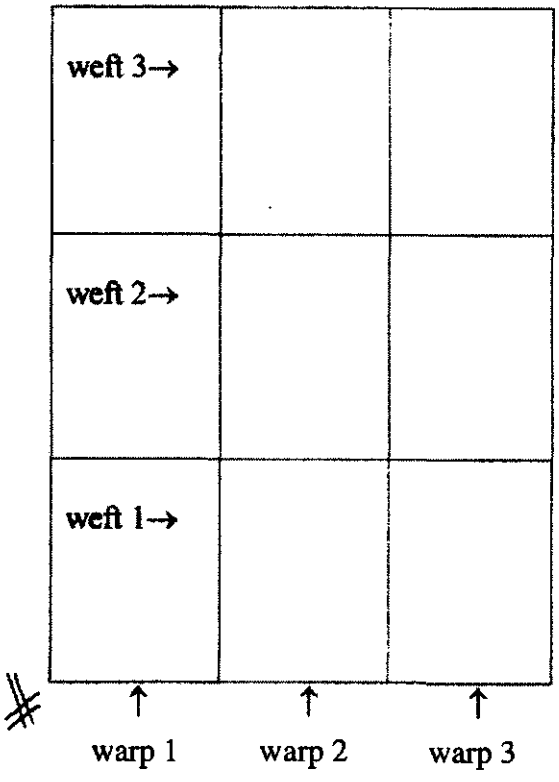
Warp 3 (dark grey) crossed with weft 1 (light grey) = not considered*
3 weft 2 (mid grey) = not considered*
3 weft 3 (dark grey) = herringbone does not show

* Not considered because warp yarn colour is darker than weft and the opposite is preferred.

Whilst it is highly unlikely that a designer would decide to have weft colours exactly as warps in a herringbone design, care must be taken in choosing the most suitable ones. In this section blanket the light grey warp has yielded two possible selections for swatching, the mid grey warp only one and the dark grey warp none at all. The dark grey warp has been completely wasted.

Section blanket design and colour layout





4.8 Dogtooth design with classic 4 & 4 colouring

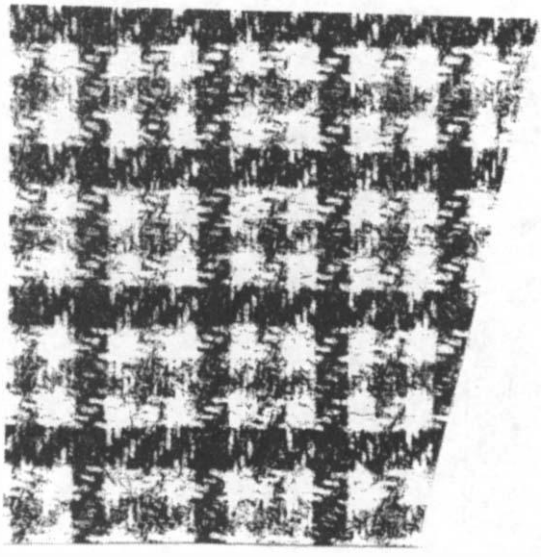
Warp 1 and weft 1	White	4
	Black	4
Warp 2 and weft 2	Light grey	
	Dark grey	
Warp 3 and weft 3	Mid grey	
	Black	

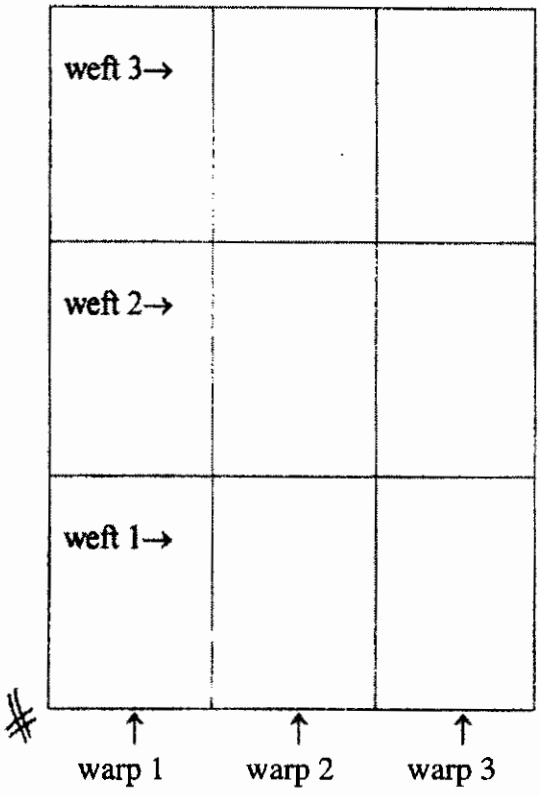
The most likely selections might be:

Warp 1 crossed by weft 1 – 'true' or perfect (warp and weft the same)
Warp 2 crossed by weft 2 – 'true' or perfect
Warp 3 crossed by weft 3 – 'true' or perfect

Warp 1 crossed by weft 2
Warp 1 crossed by weft 3
Warp 2 crossed by weft 3

Section blanket design and colour layout



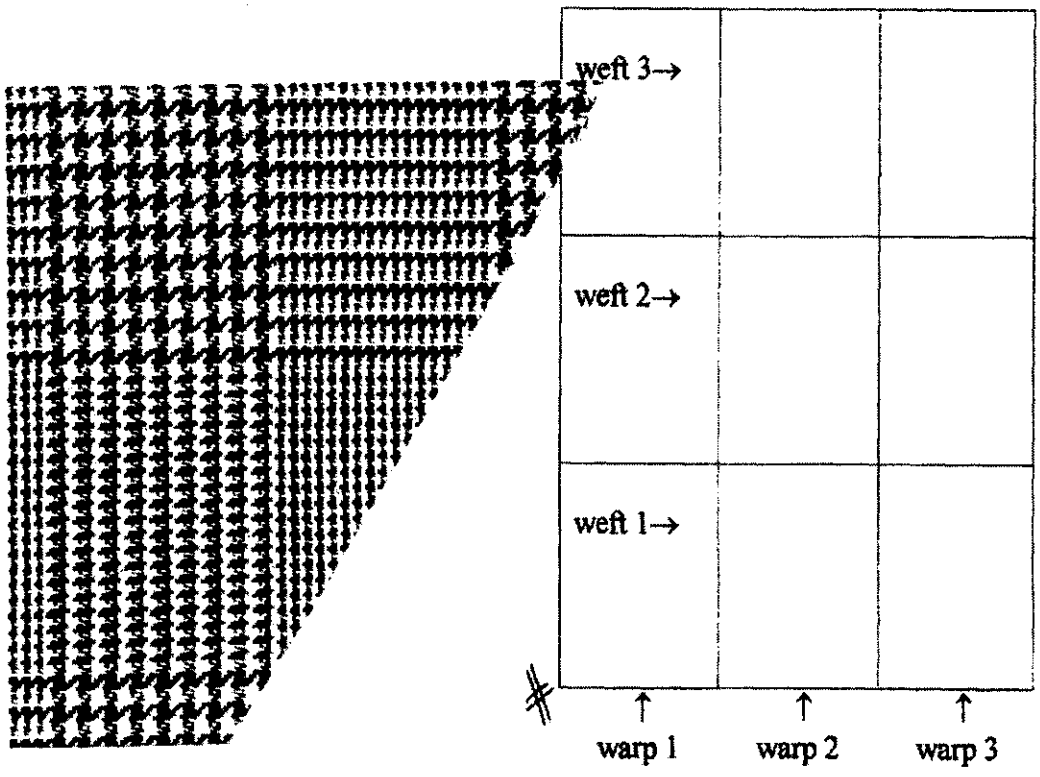


4.9 Dogtooth design with 4 & 4 gunclub colouring

Warp 1 and weft 1	Light grey	4	4
	Mid grey	4	
	Dark grey		4
Warp 2 and weft 2	Light brown		
	Mid brown		
	Dark brown		
Warp 3 and weft 3	Light burgundy		
	Mid burgundy		
	Dark burgundy		

The three 'true' or perfect colourways would be selected for swatching, together with *one or other* of the three pairs of 'opposites', making a total of six colourways.

Section blanket design and colour layout



4.10 Glen check (or Prince of Wáles check) with a gunclub colouring arrangement.

Warp set-in:

White	2	2	3	4	4	3	}	70
Mid		2		4		2	}	34
Dark	2		4		4		}	36
	64			64				140

Weft set-in:

White		3	4	4	3		2	2	}	74
Mid	2		4			2			}	36
Dark		4		4				2	}	38
			64			72				148

Three colourways for this design might be chosen from the following:

1. White / mid grey / dark grey
2. White / mid brown / dark brown
3. White / mid olive / dark olive
4. White / mid burgundy / dark burgundy
5. White / mid blue / dark blue

The glen check design can be developed further by using three different warping and wefting arrangements of approximately the same dimensions in the same section range. The three 'trues' would be selected for swatching as well as the likely interesting and unusual crossings where the weft set-ins differ from the warp set-ins. In the three styles in figure 4.11, weft set-ins are shown as warp but this is merely for convenience. As always, extra picks should be added to the two and two weft sections to make the designs slightly longer.

Figure 4.12 features a design for a womenswear jacketing cloth in natural colour combinations – possibly greys and fawns. The same three yarn colours A, B, and C are used in each of the three warps and wefts but moved up one line at a time in each warp to a different position in the set-in. This gives three completely different looking 'true' designs and colourways, as well as unusual and unpredictable crossings. The idea works particularly well with neutral and classic colours in almost any check design which gives varying proportions of the three colours.

Many more section blanket design and colour layouts could have been included but hopefully the ones shown will be sufficient to give the reader an idea of how yarn colours chosen for warps and wefts will look when they cross each other during weaving.

When compiling section blanket layouts the designer should always try to get the maximum number of designs and colourways worthy of selection for swatching, from the minimum number of yarn colours, drafts and loomings.

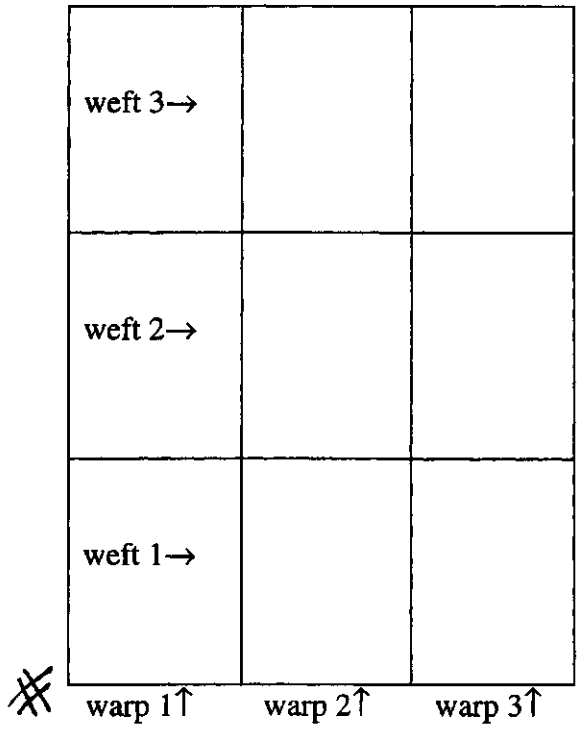
4.5 Common warps

The selection of possibly six colourways from a standard three warp, three weft section blanket will almost certainly mean that all three warps will be utilised. Subsequent sample lengths and pieces ordered will be fragmented, some colours will be on warp 1, some on warp 2 and others on warp 3, and the number of loomings from that point onwards will rapidly increase.

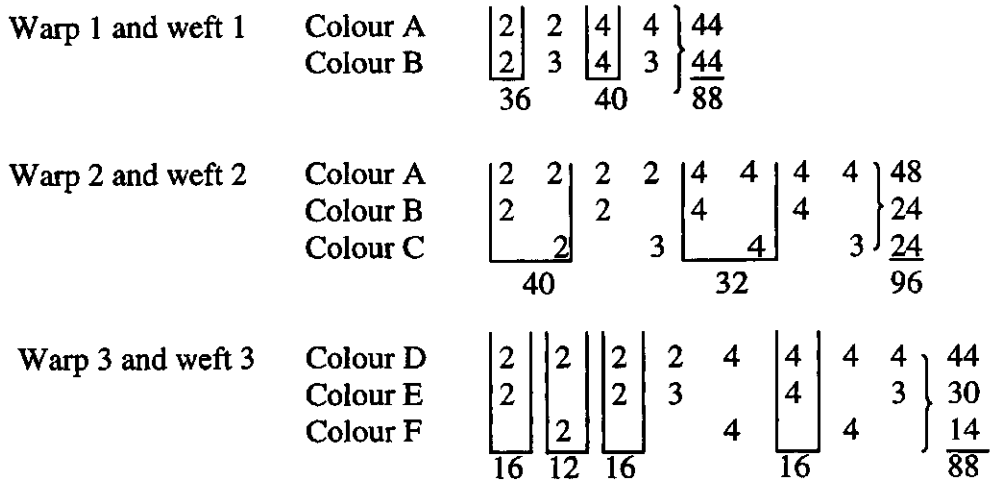
Imagine how convenient it would be if all the colourways in a particular design were on one warp only and sample lengths and pieces could be added together to give longer and more economical production runs. As well as considerably reducing the number of loomings, this would also allow further economies to be made through larger spinning and dyeing lots of fewer yarn colours.

Whilst it would be impossible to get sufficient variety from a collection made up entirely of single warp section blankets, it is worth recognising that some designs can be used in such a way that even though they are single warps they can provide considerable variety. Examples in figures 4.13, 4.14 and 4.15 show how a variety of designs and colourways can be obtained from a small number of carefully thought out single warp section blankets with appropriate wefts.

Section blanket design and colour layout

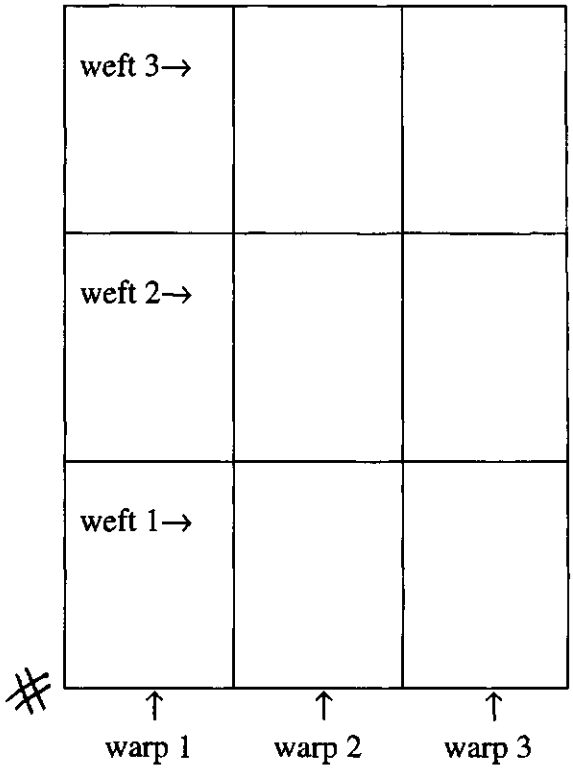


4.11 Three different warp and weft set-in arrangements



In the three examples above warp and weft set-ins are shown to be the same but this is merely for convenience. As previously mentioned, a few more picks are added to the weft set-ins to make the designs look slightly longer.

Section blanket design and colour layout



4.12 Three colours moved up one place in each colourway

Warp 1 and weft 1	Colour A	16	4	16		4		}	40
	Colour B	2	2	4	6	6	4	}	24
	Colour C			8		8		}	16
Warp 2 and weft 2	Colour B								
	Colour C								
	Colour A								
Warp 3 and weft 3	Colour C								
	Colour A								
	Colour B								

There are many possible three-colour combinations that could be used in this design. Whichever combination is chosen will apply to all three warps but the proportions of each colour will be different in each warp. An attractive combination of neutral colours might be:

Colour A light grey
Colour B mid camel
Colour C dark grey

Section blanket design and colour layout

Warp: White 4
Black 4

Weft 1:	White 4 Black 4
Weft 2:	Light grey Mid grey
Weft 3:	Mid grey Dark grey
Weft 4:	Light camel Mid brown
Weft 5:	Mid brown Dark brown
Weft 6:	Mid blue Dark blue
Weft 7:	Mid tan Dark tan
Weft 8:	Mid turquoise Dark turquoise
Weft 9:	Mid gold Dark gold
Weft 10:	Mid emerald Dark emerald

4.13 Single warp section blanket

This is a single warp section blanket coloured four threads of white, four threads of black suitable for any fabric, with a selection of ten wefts. The cloth might be say, a 350 grammes/linear metre Shetland jacketing in 2/2 twill, suitable for both womenswear and menswear. Wefts 1 to 5 inclusive across this warp would be acceptable for menswear jackets and the same five wefts plus wefts 6 to 10 inclusive might be suitable for womenswear jackets. This would give possibly two different end use fabrics in a large selection of colourways woven on the same single warp.

Section blanket design and colour layout

This time a multicoloured, irregular stripe arrangement on one warp is featured. This is crossed with solid (one colour) light, medium and dark coloured wefts. As in the previous example some of the colourways are suitable for womenswear and others for menswear.

Warp:	Fawn	8				6		14
	Mid brown	2	2	6				10
	Dark brown	4		2				6
	Light grey		4	6				10
	Mid grey				4		2	6
	Black			2	2	6		10
								56

Weft 1: Fawn

Weft 2: Mid brown

Weft 3: Dark brown

Weft 4: Light grey

Weft 5: Mid grey

Weft 6: Black

Weft 7: Mid olive

Weft 8: Mid crimson

Weft 9: Mid blue

Weft 10: Dark olive

Weft 11: Dark bottle

Weft 12: Dark maroon

Weft 13: Dark blue

4.14 Single multicoloured warp section blanket

Section blanket design & colour layout

This is another carefully chosen single warp but this time with colour arrangements in the wefts to give four quite different design effects. If a neutral colouring arrangement were to be used in this single warp then each of the four designs could be featured in half a dozen different weft colourings – greys, fawns, olives, burgundys, blues and greens thereby giving many more designs/colourways to choose from only one warp. The following figure 4.16 shows what the designs actually look like in white, grey and black

Warp: White 3 3
Black 1
Grey 3

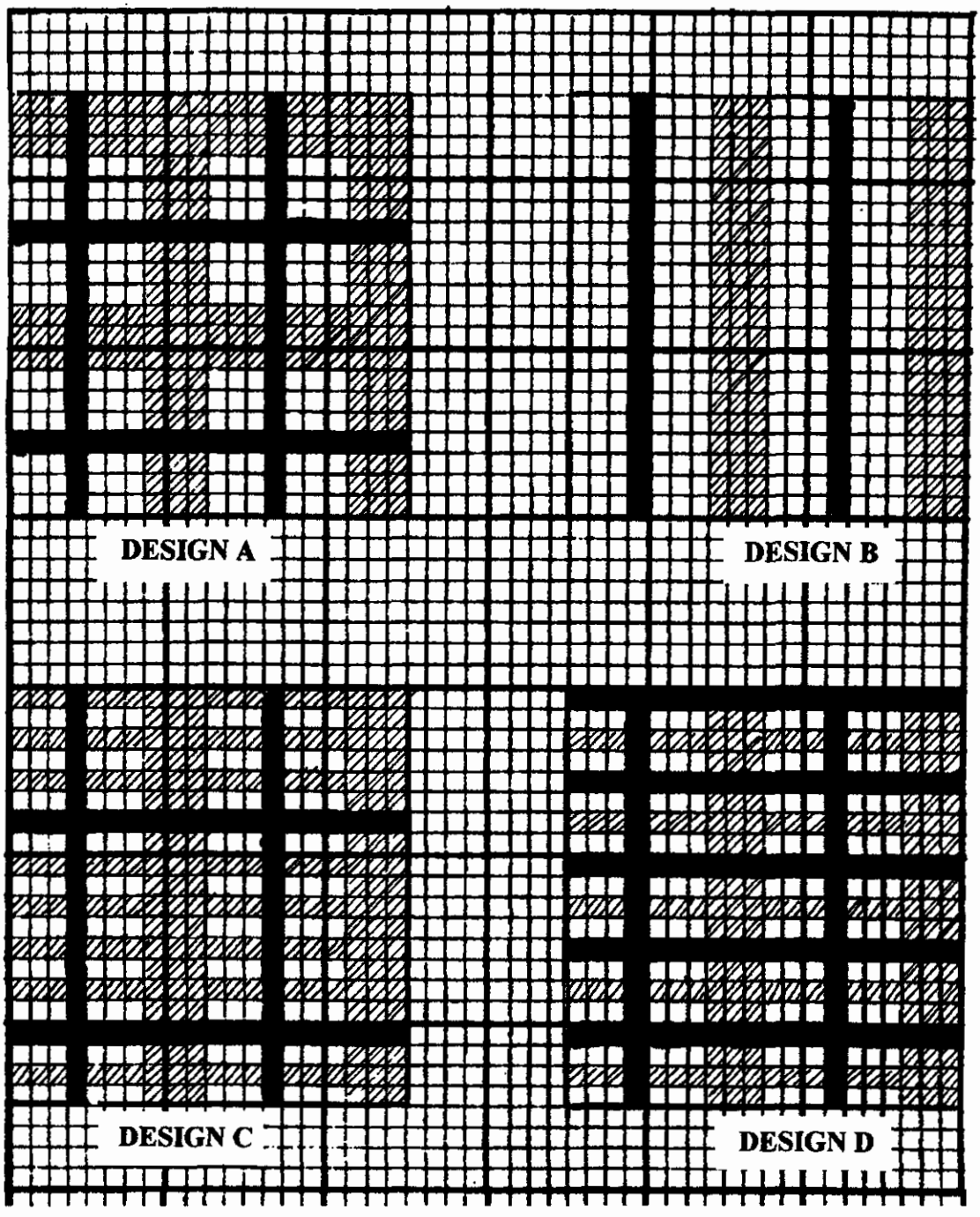
Weft 1: White 3 3
Black 1
Grey 3 **Design A**

Weft 2: White **Design B**

Weft 3: White 1 1 1 1 1
Grey 1 1 1 1
Black 1 **Design C**

Weft 4: White 1 1
Grey 1
Black 1 **Design D**

4.15 Four different designs from a single warp



4.16 Four designs in white, grey and black combination on a single warp

4.6 Common drafts

The actual time required to weave a 70 metre warp on present day high speed looms is relatively short, but the time required to warp, heald and sley that same piece is considerable. Therefore anything that can be done to reduce the number of healdings and sleyings merits attention.

In the woollen manufacturing section of the industry all sorts of drafts are used, particularly for womenswear fabrics – 4 shafts, 8 shafts, 12 shafts and in some cases 16 shafts. For every sample length and sample piece ordered a draft has to be used, not necessarily a different one for each design but nevertheless a considerable number of individual drafts, each one to produce a particular weave.

For example, 2/2 twill would require 4 shafts straight but four right, four left herringbone would require 4 shafts drafted and the 8-end Mayo weave 8 shafts straight draft. If a sample length or piece is ordered in each of the three weaves, provided they are in the same fabric quality and sett, and regardless of differences in colour of warps, all three can be woven from one draft (8 shafts straight), with three appropriate peg plans. A considerable saving in time and money can be effected by tying or knotting the three warps together then drafting and sleying only once and changing the peg plan at the start of each piece.

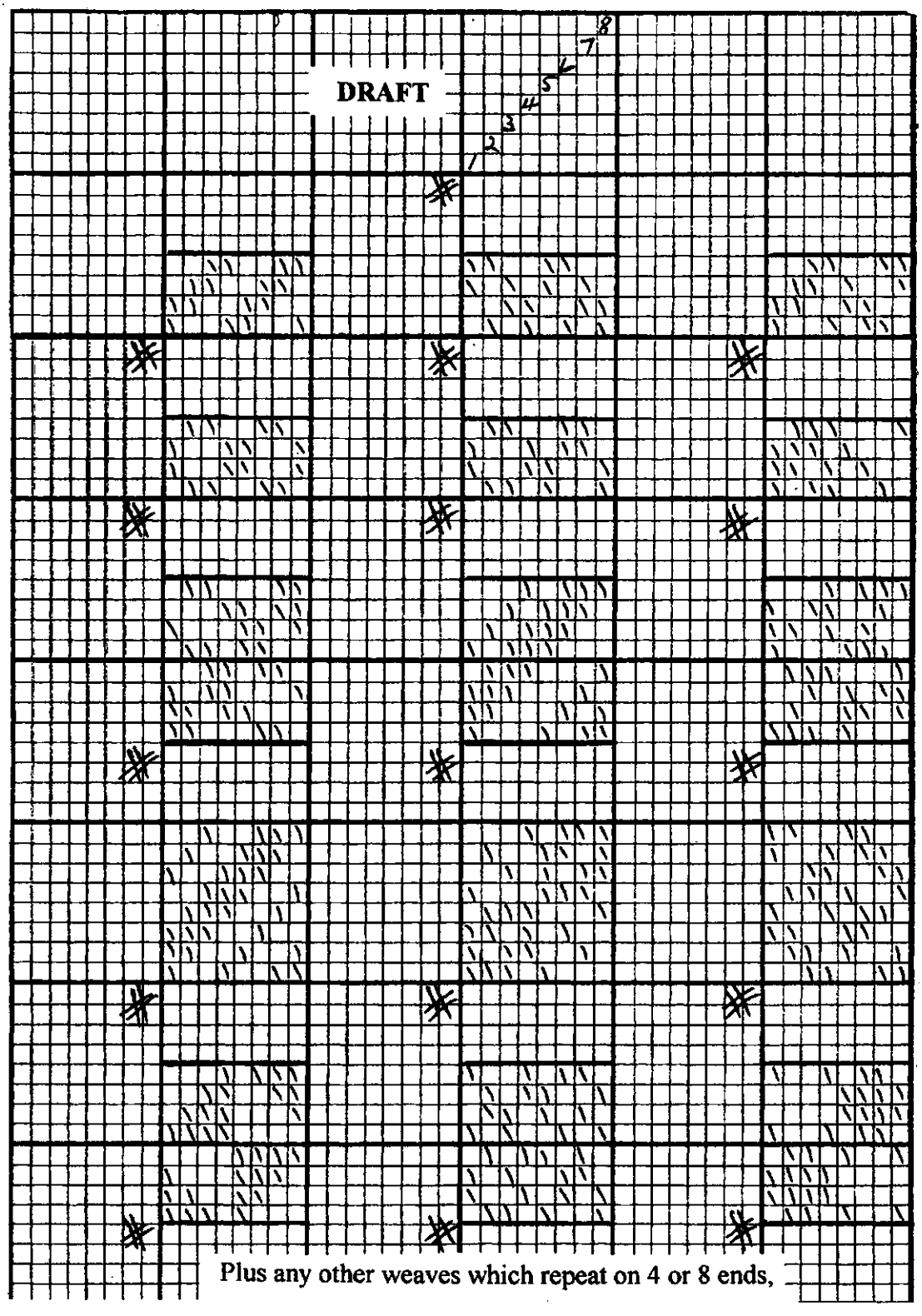
The cost-conscious designer can take this principle a stage further by intentionally making some section blankets in the collection with drafts, which can produce a variety of designs on the same warp.

Figure 4.17 shows an 8 shaft straight draft which can weave all the designs illustrated plus any others which repeat on four or eight ends. The number of weft picks in the repeat of any such weaves is immaterial.

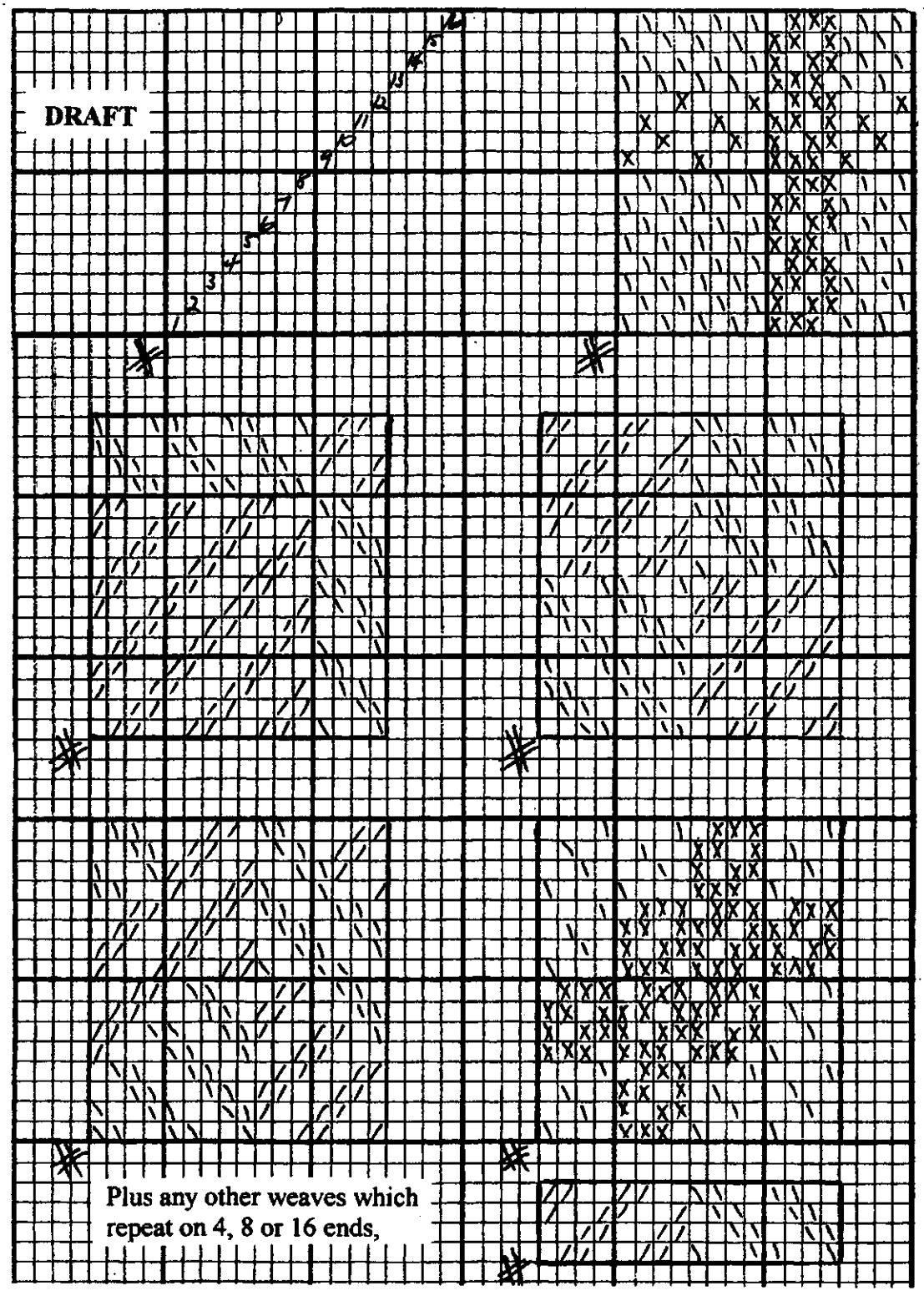
A 16 shaft straight draft is featured in figure 4.18 and can be used to produce all of the previous four end and eight end weaves plus any that repeat on sixteen ends. A small and varied collection in a basic fabric quality could be made from a white or light neutral coloured warp with five or six solid weft colours in medium through to dark tones, using a cross-section of the weaves illustrated. The peg plans for the 8 shaft and 16 shaft straight drafts would be exactly as the designs shown.

Six different weaves using 2/2 twill standard interlacings in the warp can be woven from the same 10 shaft drafted gear shown in figure 4.19. Every other warp thread in the six weaves interlaces either two up, two down or two down, two up and this means that 50% of the warp threads in each of the weaves need only two shafts and the eight other different interlacings require the other eight shafts. The corresponding peg plans are shown in figure 4.20.

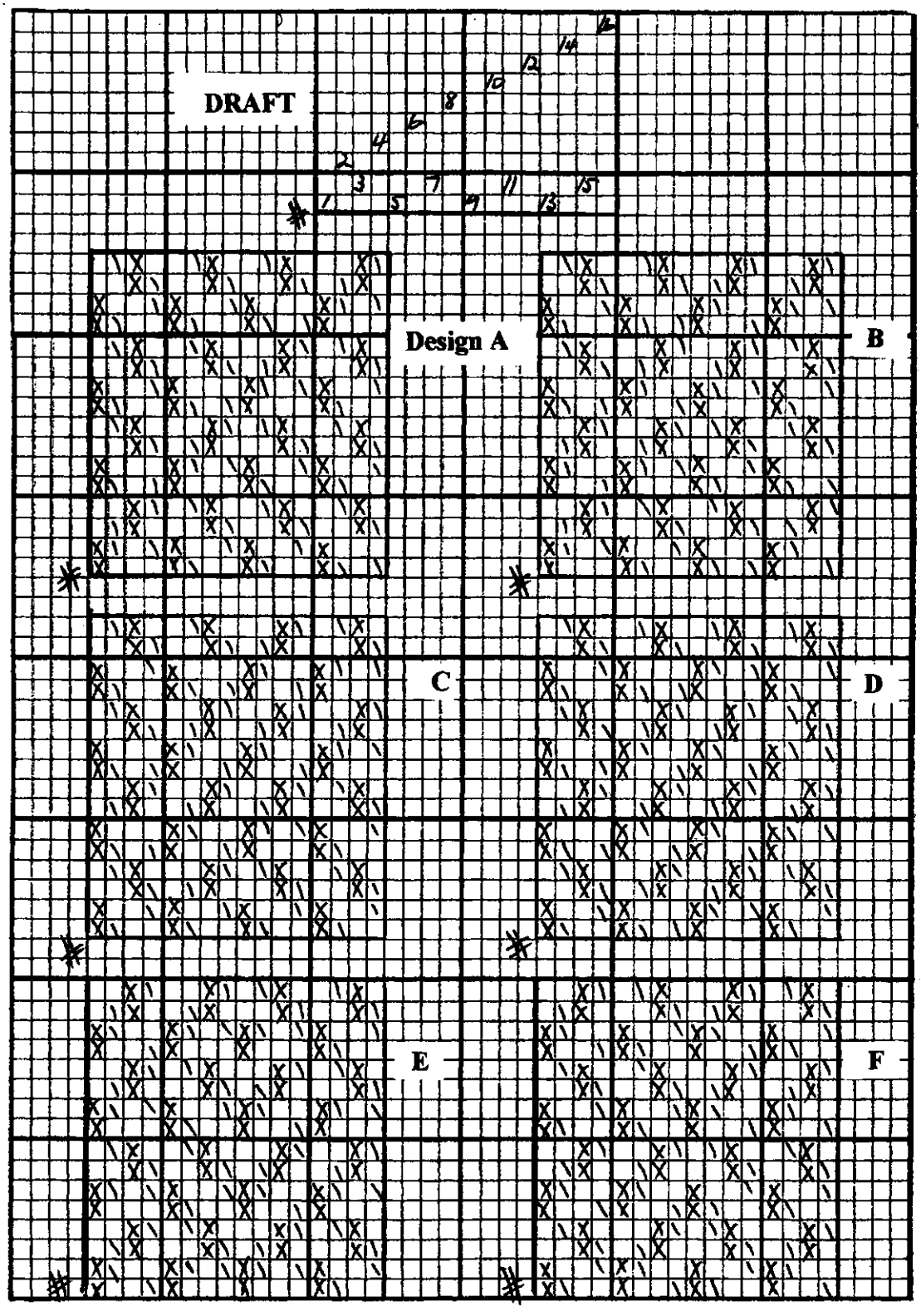
Another 10 shafts drafted gear can produce eighteen different designs as shown in figures 4.21, 4.22, 4.23 and 4.24. Each weave has plain weave ground with a different effect formed in leno weave. Four shafts are required for the plain weave part of each design and the other six shafts are used to form the small figured effects. This idea is very effective in piece-dyed worsted fabrics where the floats of three forming the figures in warp and/or weft reflect the light differently. The peg plans are given in figures 4.25 and 4.26.



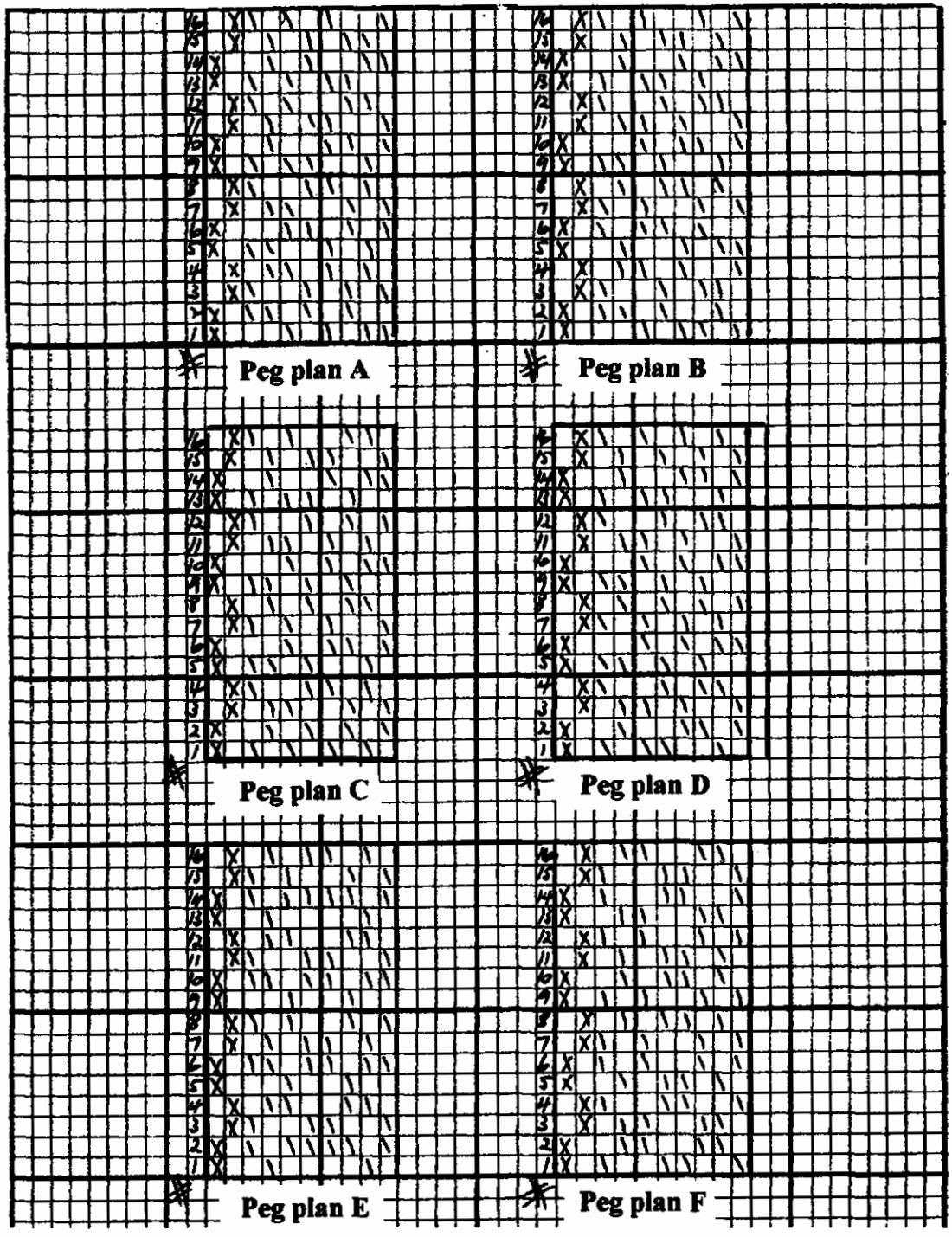
4.17 Selection of designs which will weave on an 8 shaft straight draft



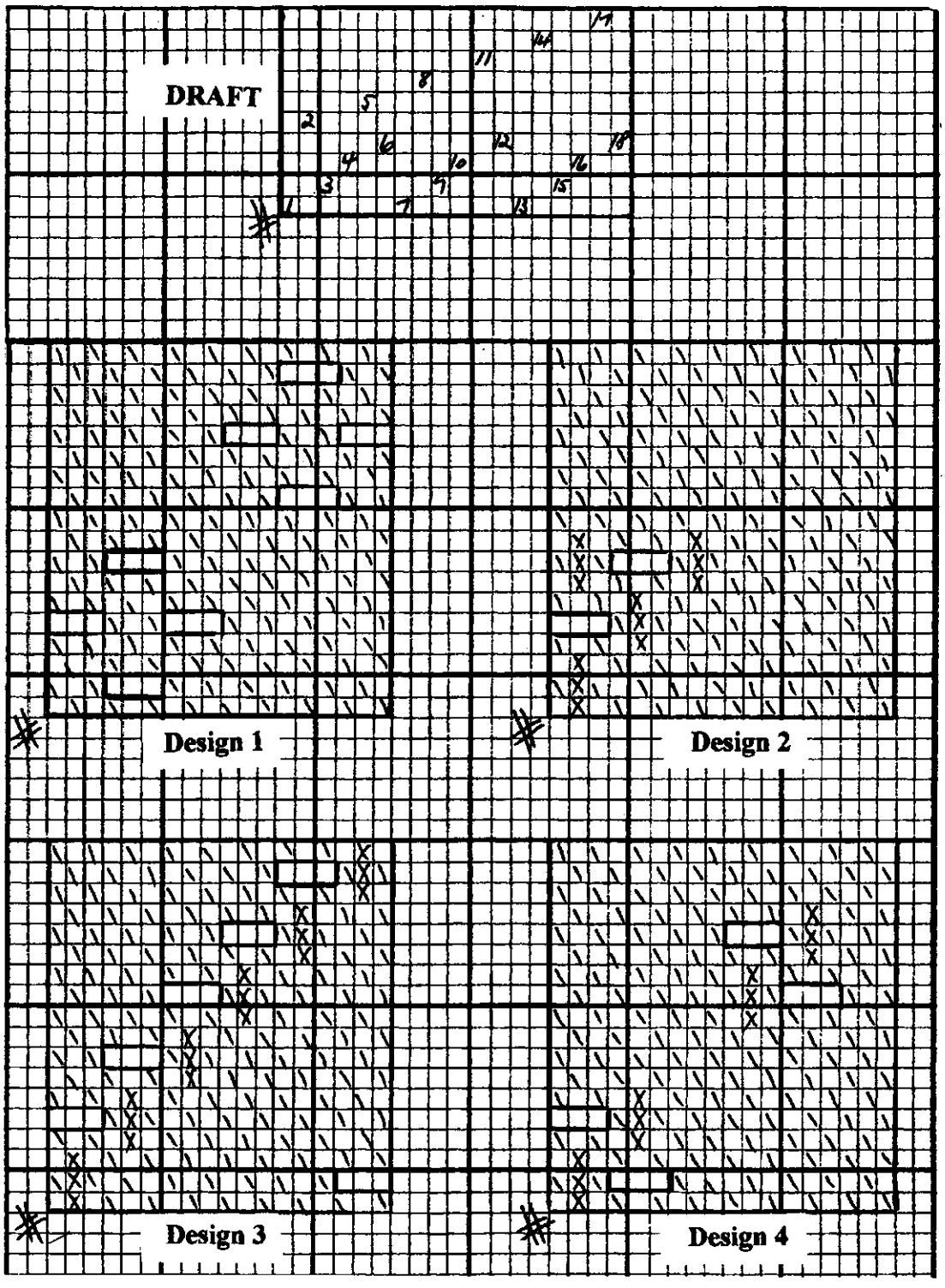
4.18 Selection of designs which will weave on a 16 shaft straight draft



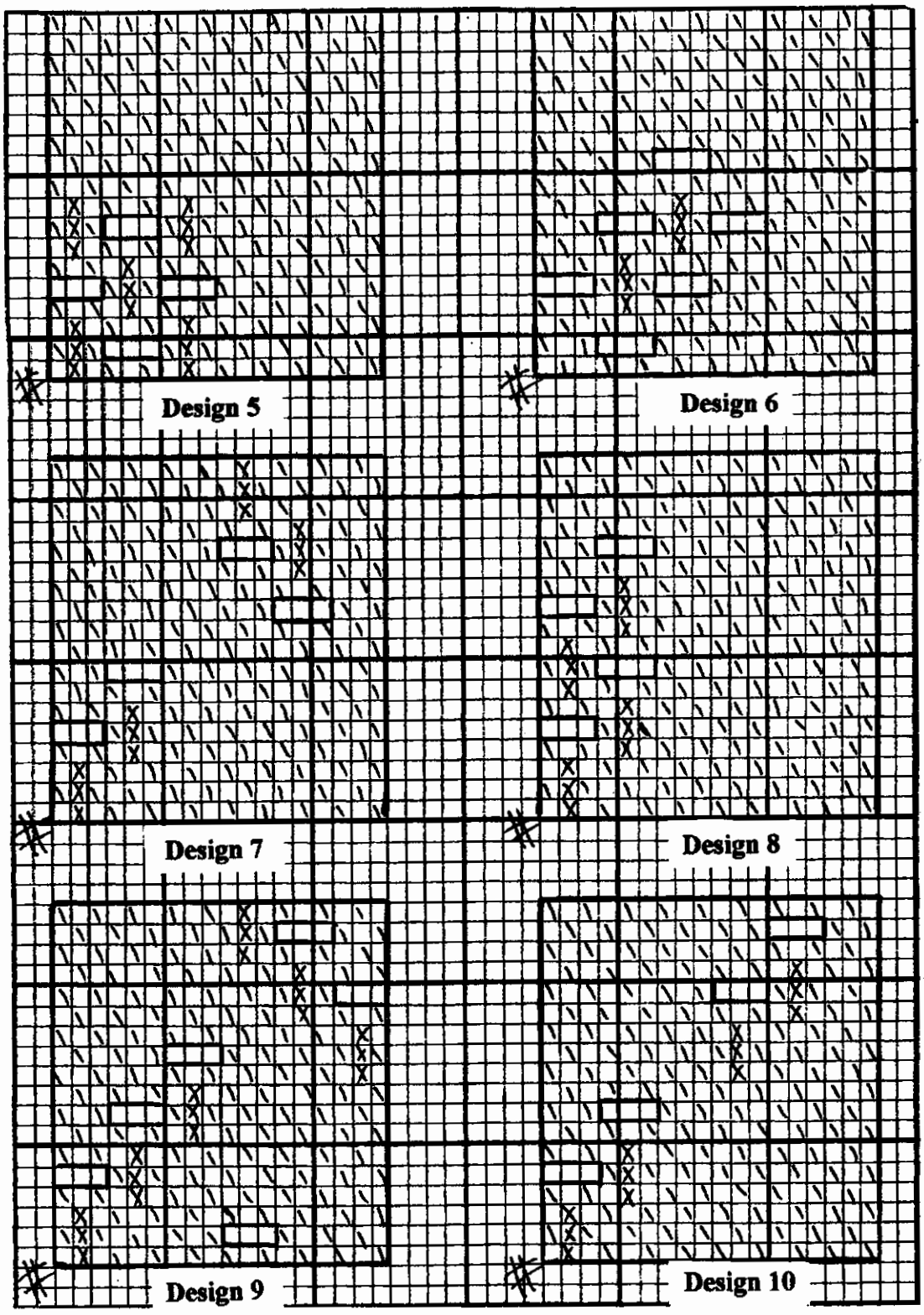
4.19 Weaves using 2/2 twill standard interlacings in warp and woven from same draft



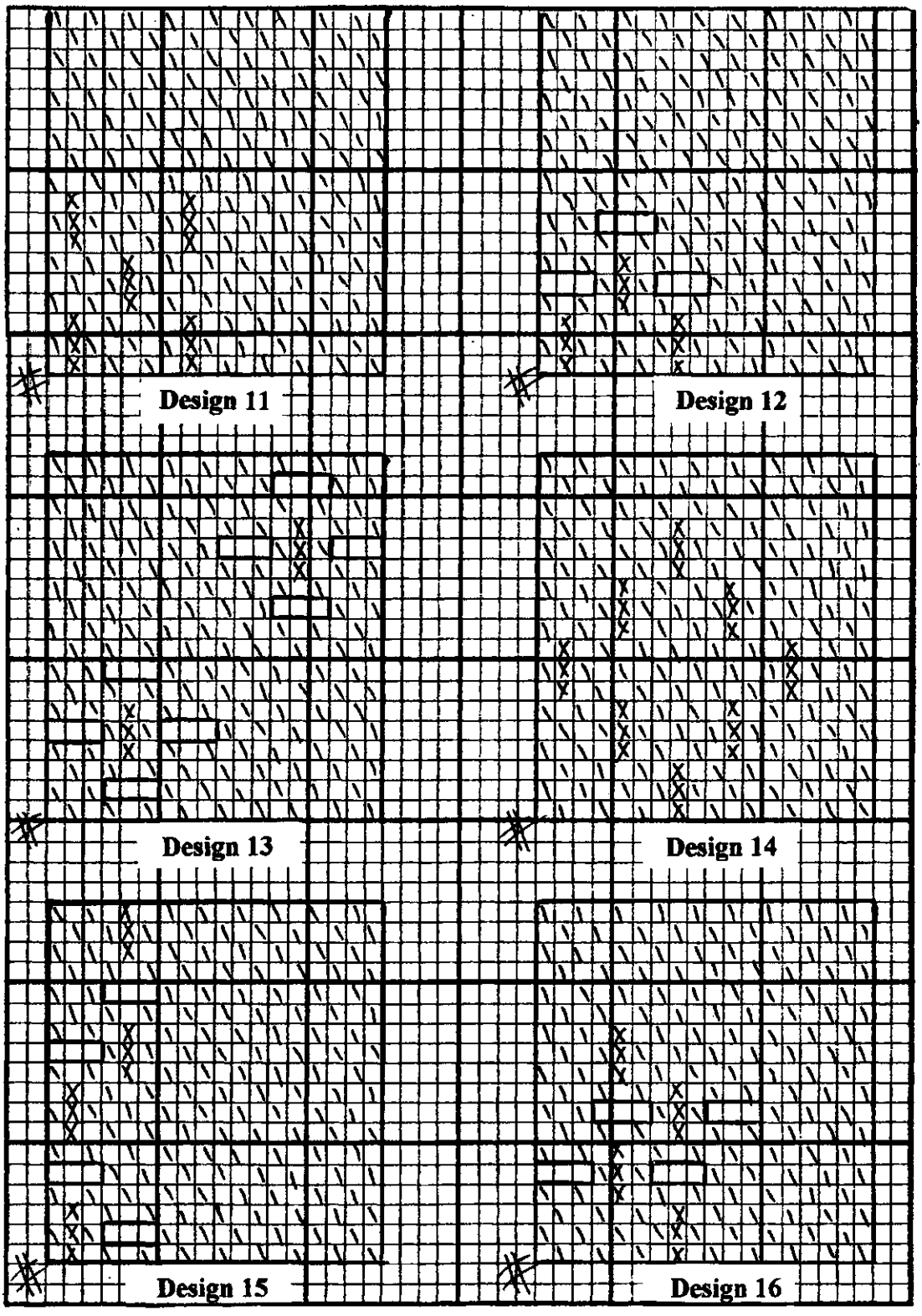
4.20 Respective peg plans for designs in figure 4.19



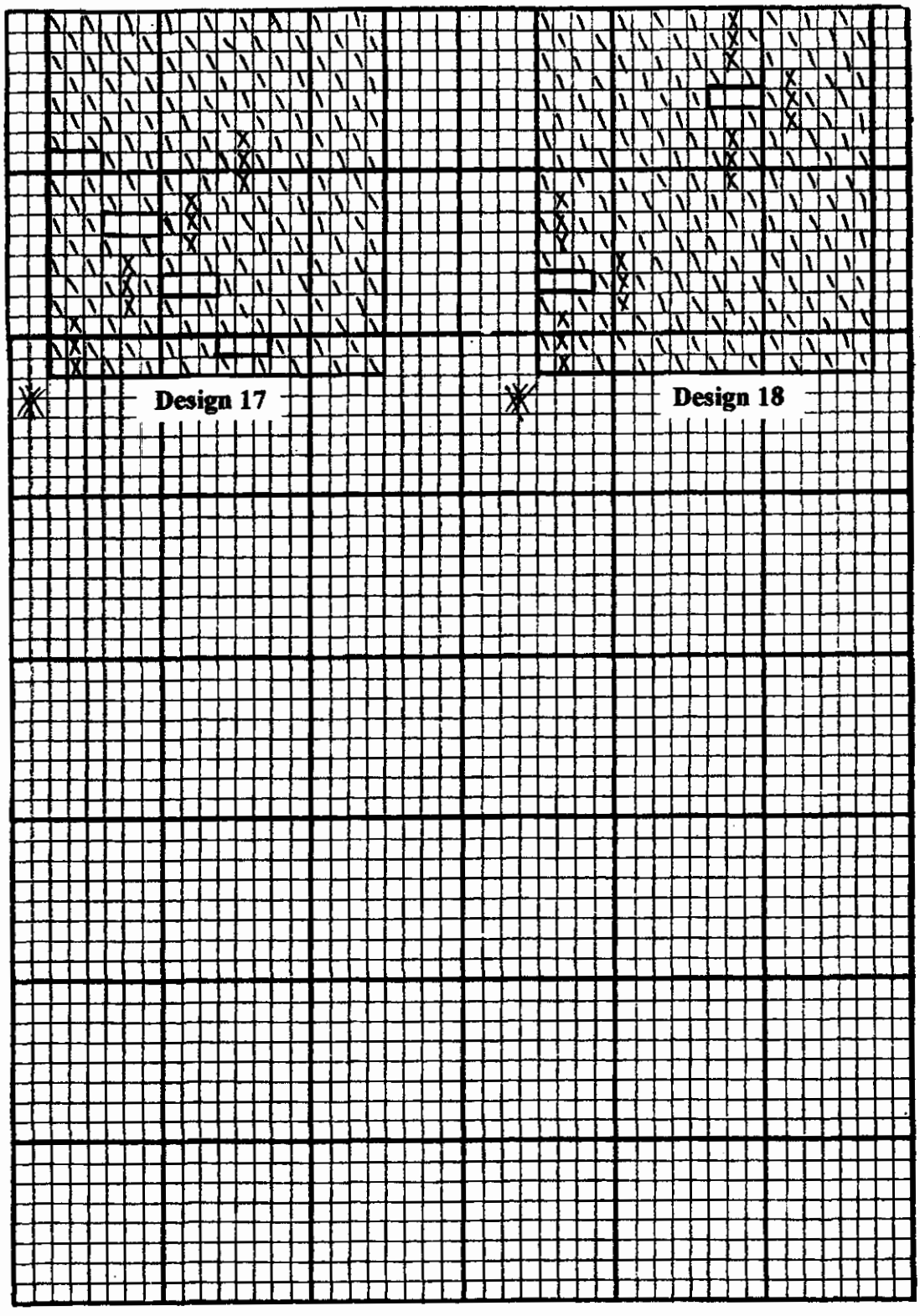
4.21 Designs which can be woven from the same 10 shaft draft



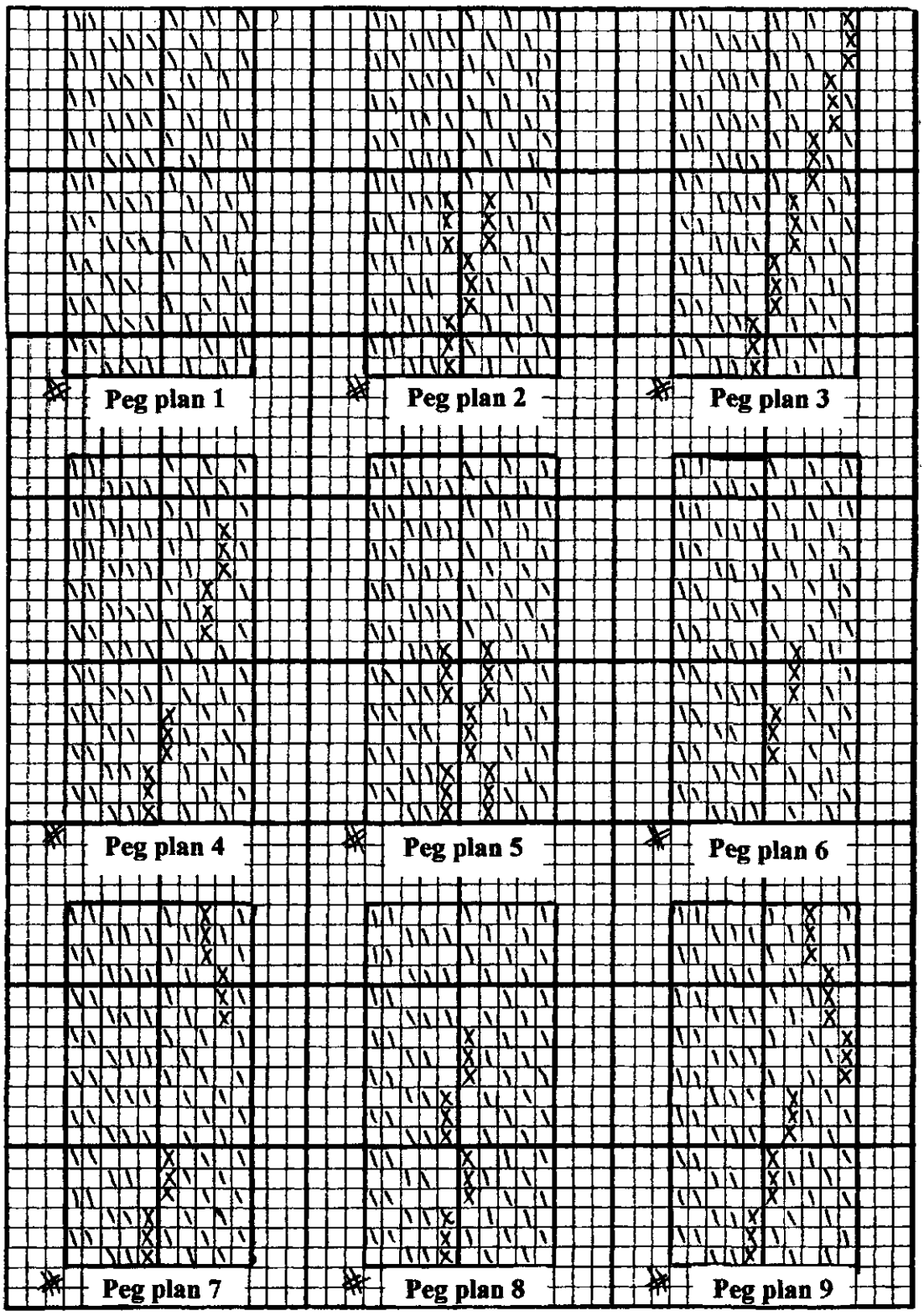
4.22 Designs which can be woven from the same 10 shaft draft (continued)



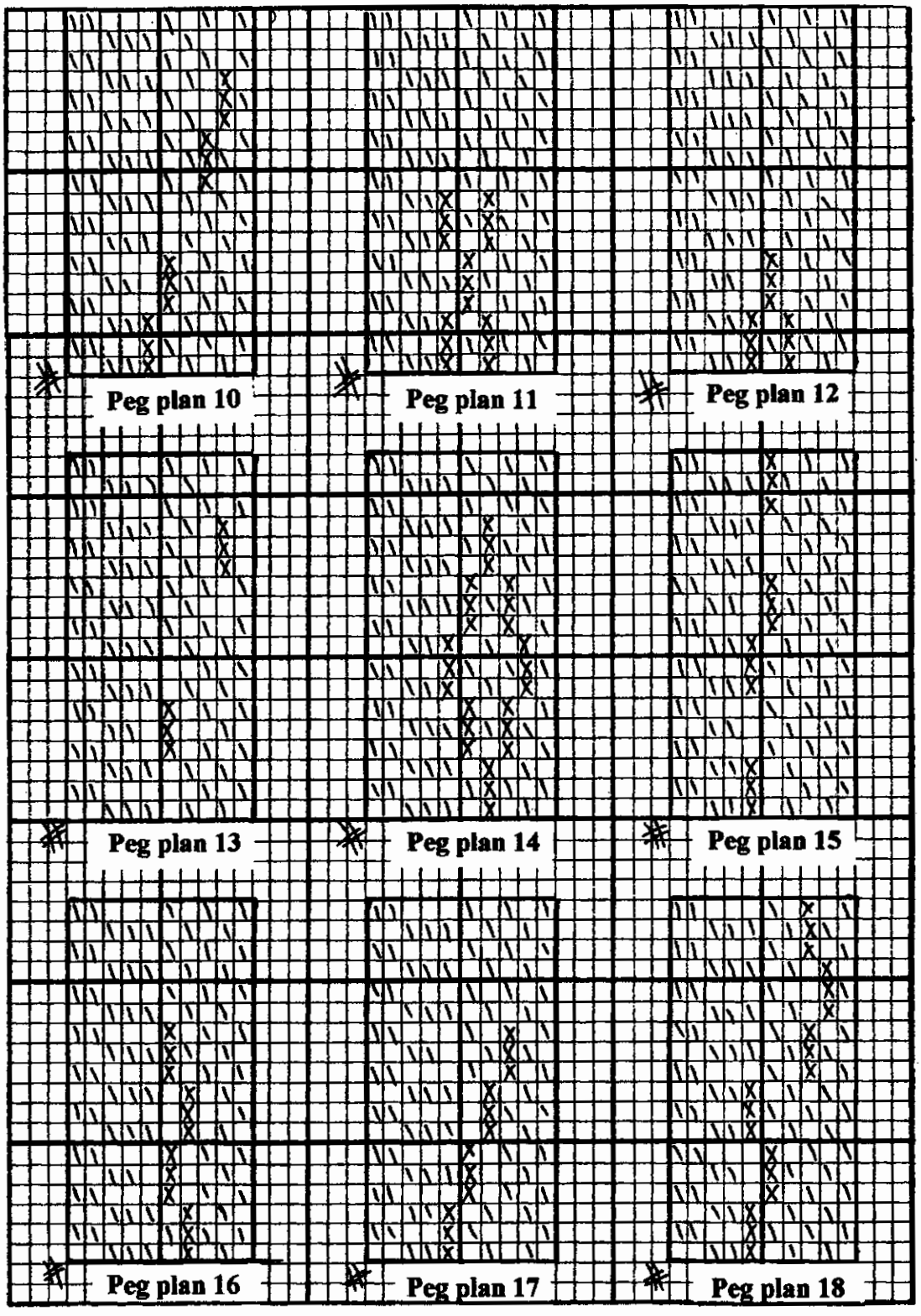
4.23 Designs which can be woven from the same 10 shaft draft (continued)



4.24 Designs which can be woven from the same 10 shaft draft (continued)



4.25 Peg plans for previous eighteen designs



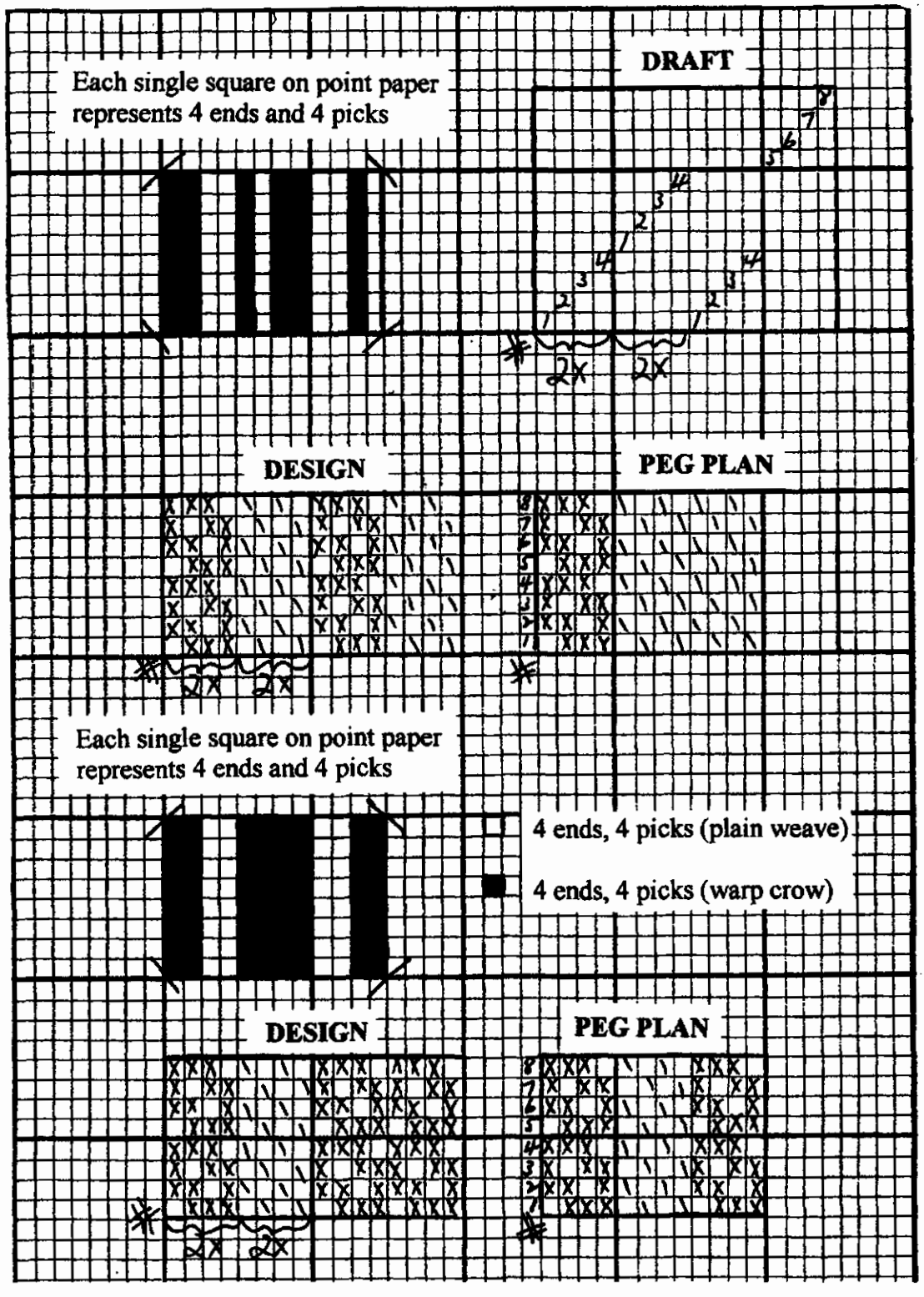
4.26 Peg plans for previous eighteen designs (continued)

Figures 4.27 and 4.28 show a 12 shaft draft which gives four different stripe designs. All have plain weave ground with vertical stripes formed in warp crow weave. Each small white square on the point paper represents four ends and picks of plain weave and every small black square indicates four ends and picks of warp crow weave. As in the previous example, this idea also works very successfully on piece-dyed worsted fabrics and single yarn woollen fabrics where soft and subtle stripe effects are formed.

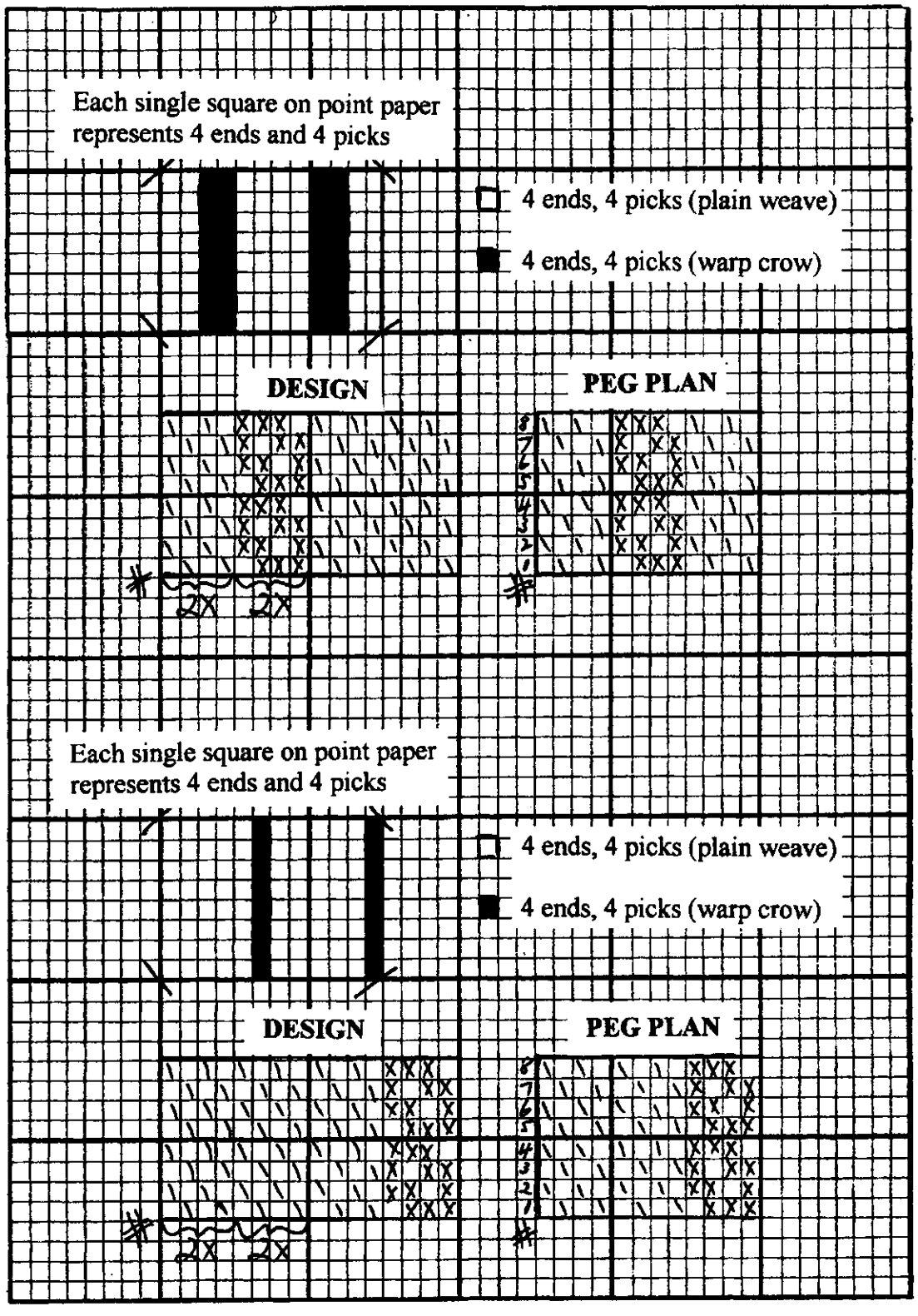
The final examples in figure 4.29, 4.30, 4.31 and 4.32 show the same 16 shaft draft used to give four different check designs and appropriate peg plans, in plain weave grounds with checks formed in warp crow and weft crow weaves. The vertical parts of the checks are formed by warp crow and the horizontal by weft crow. This idea also works very effectively in piece-dyed worsted fabrics and single yarn woollen fabrics, forming soft and subtle shadow checks. There again, every tiny square on the point paper motif represents four ends and four picks.

This final chapter has covered topics such as section blanket design and colour layouts, common warps and common drafts though many more suggestions and examples might have been provided. The main objective has been to try and influence the reader to think practically as well as creatively. Much has been said of the considerable cost of cloth trials and section blankets and it cannot be repeated too often that alongside creativity, an awareness of cost-saving must be ever present.

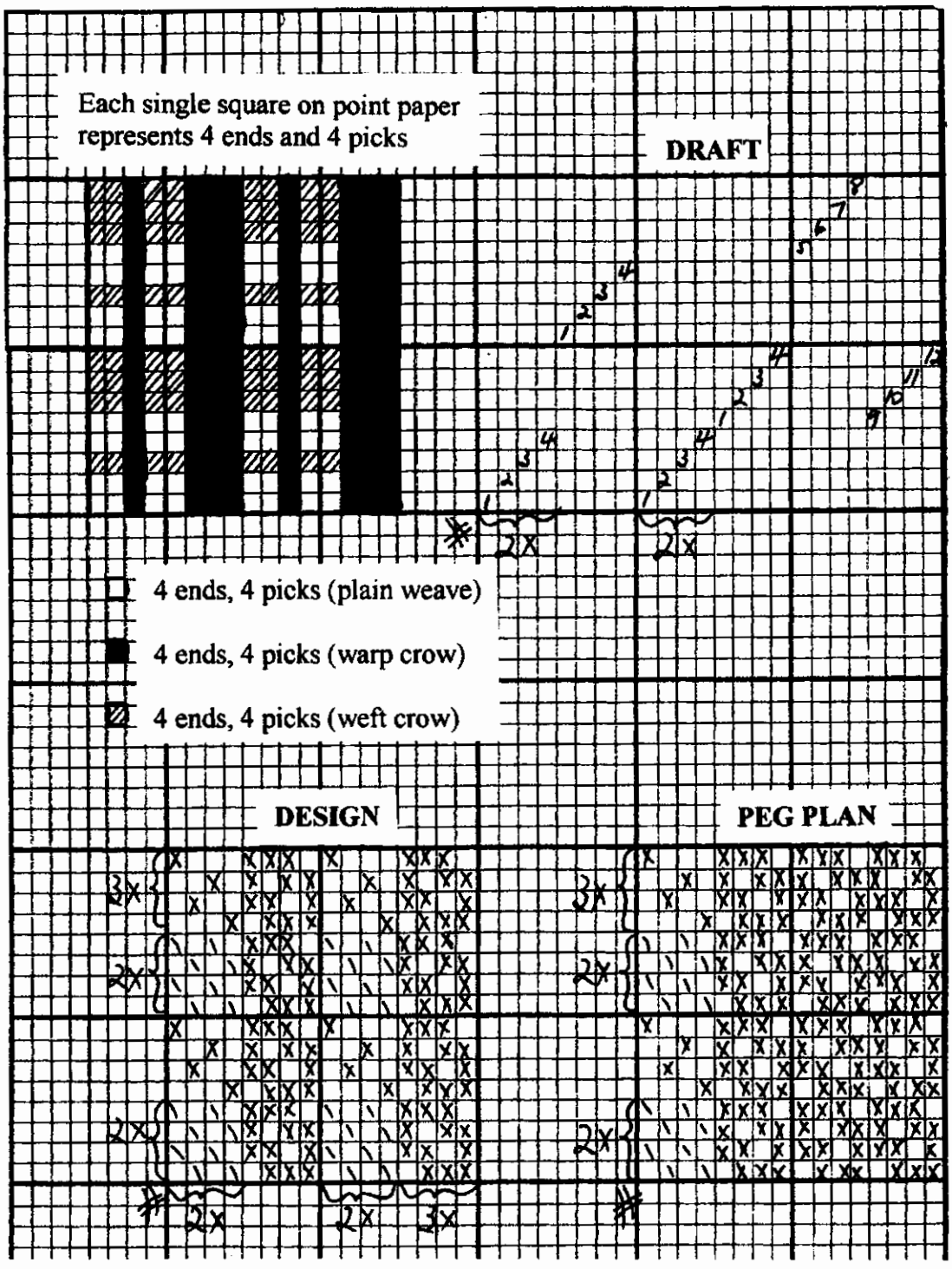
It is to be hoped that this book has helped to compensate for any information that might be missing after completion of technical education and when the fledgling woven fabric designer starts work in an industrial environment.



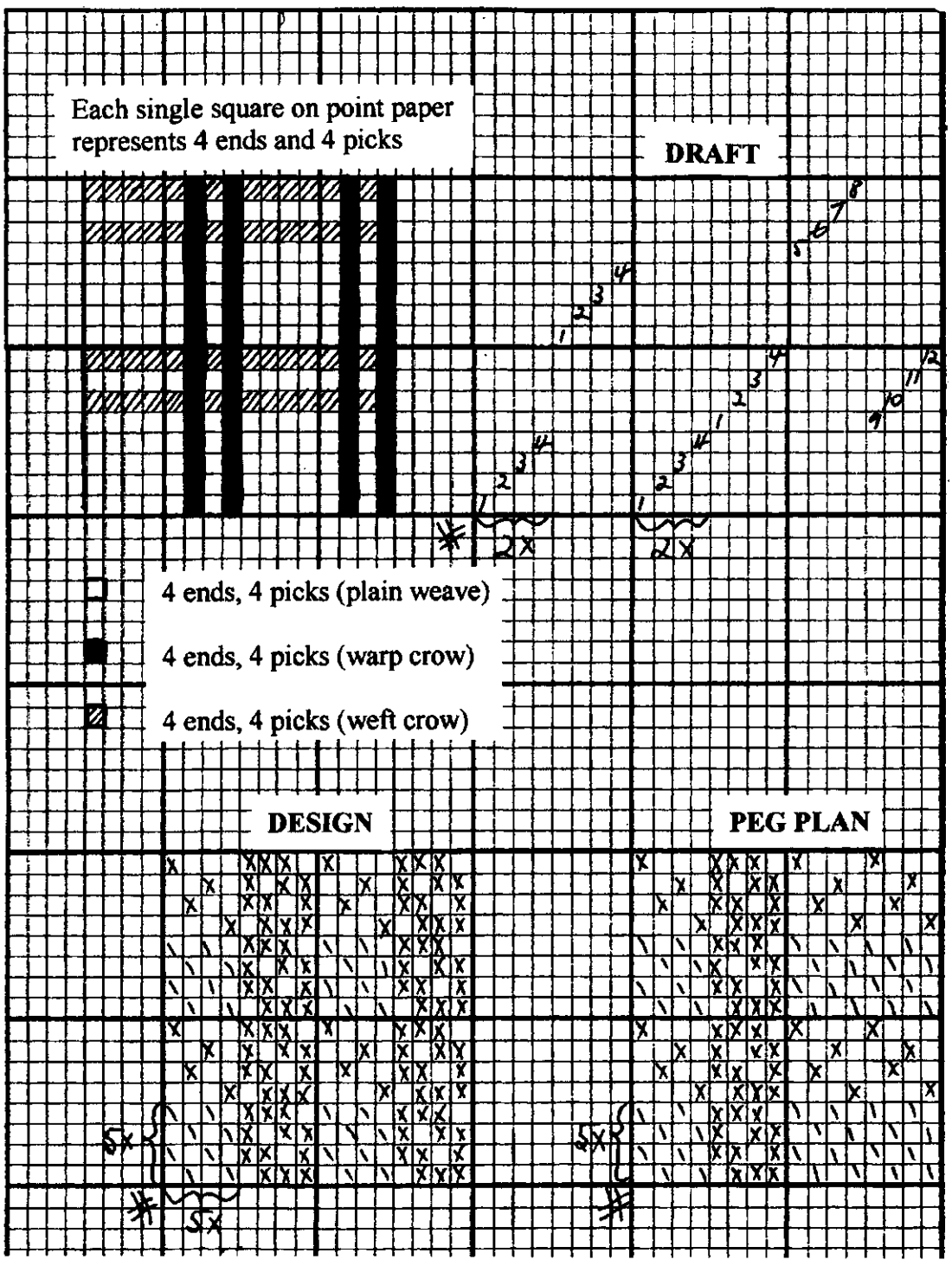
4.27 Different stripe designs from same 12 shaft draft



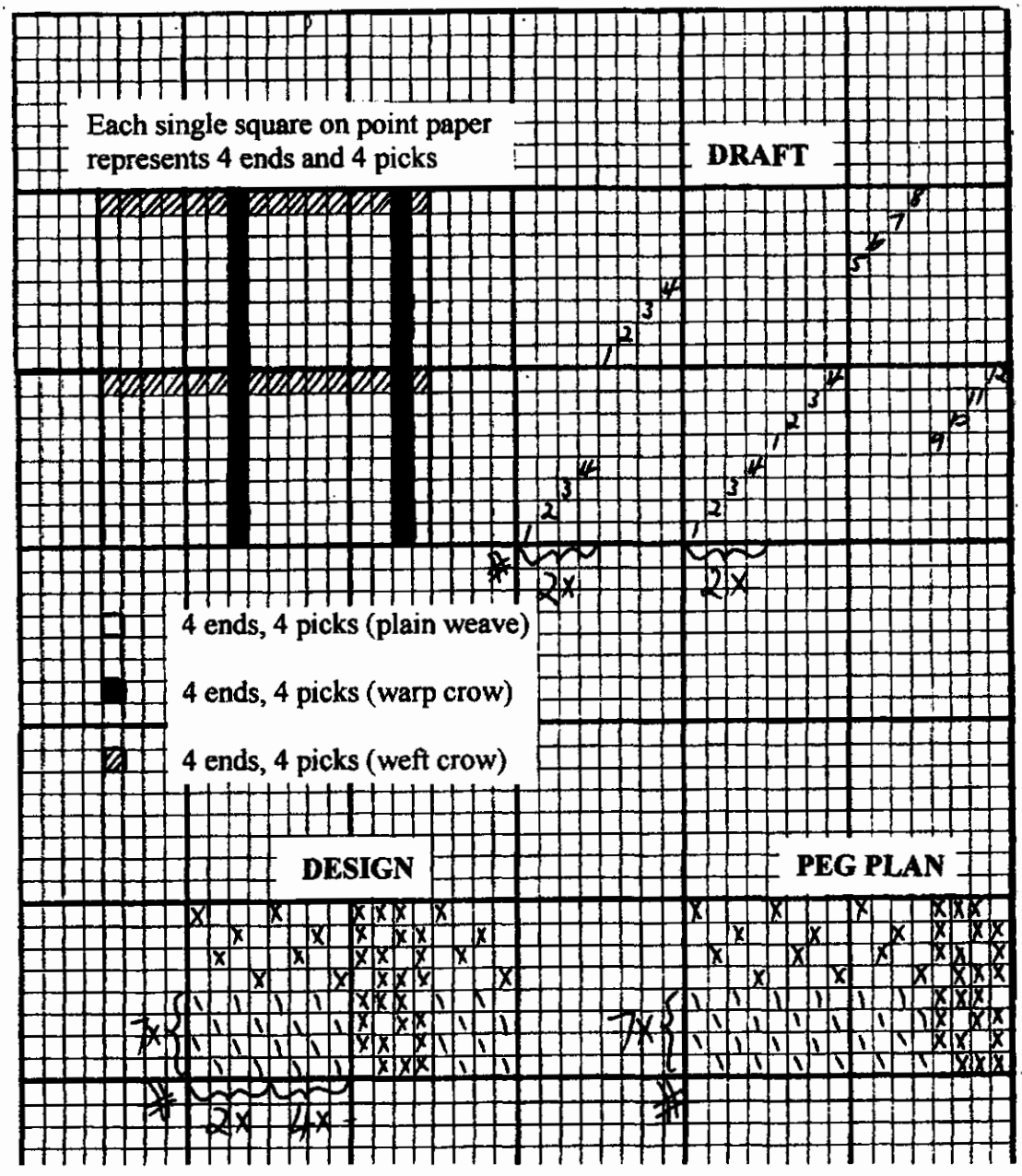
4.28 Different stripe designs from same 12 shaft draft (continued)



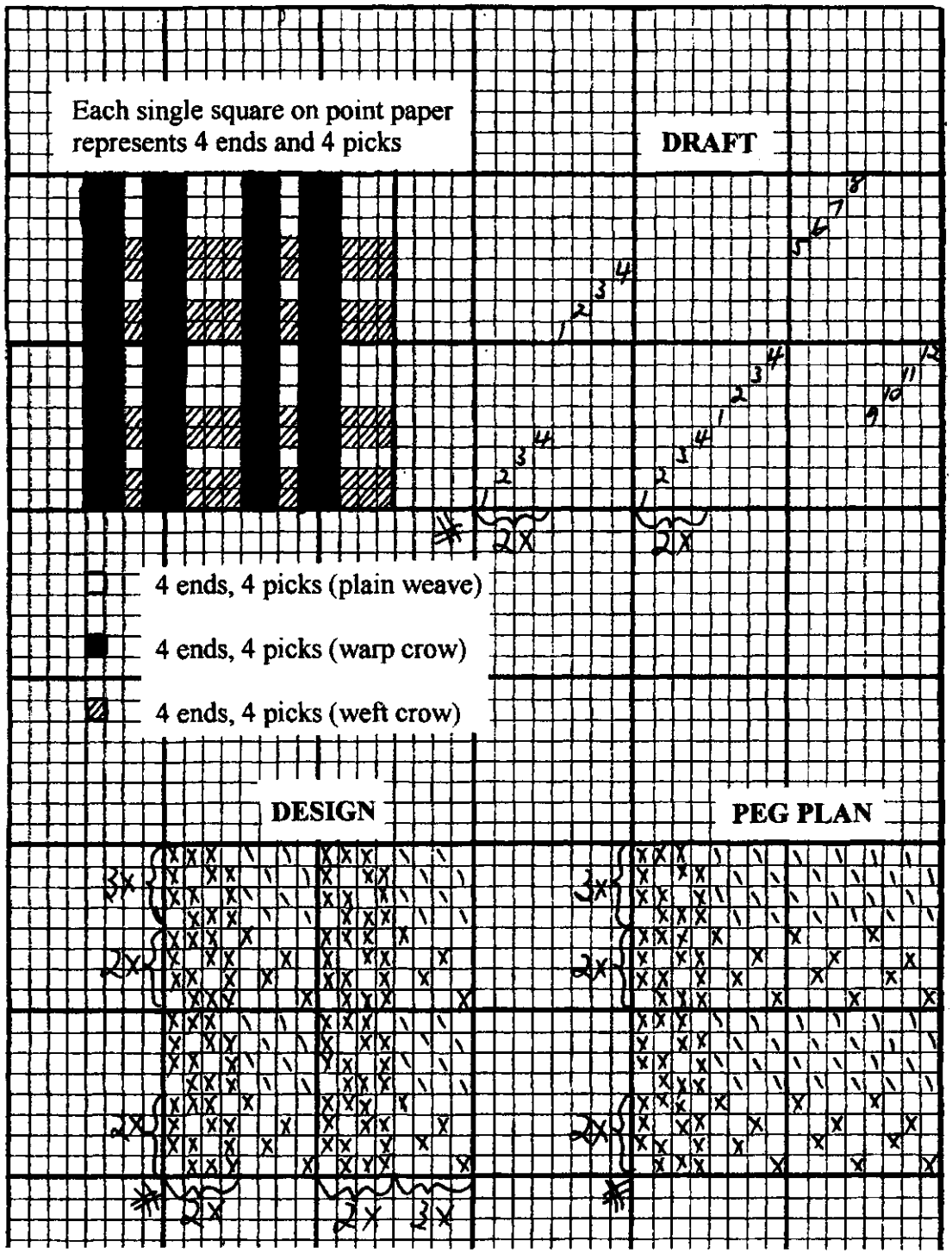
4.29 Different check designs from same 16 shaft draft



4.30 Different check designs from same 16 shaft draft (continued)



4.31 Different check designs from same 16 shaft draft (continued)



4.32 Different check designs from same 16 shaft draft (continued)