

**PATTERN DRAFTING OF WARP AND WEFT COLOUR ALIGNMENTS DESIGNS,
TRANSCRIPTION AND CONVERSION TO WOVEN FABRICS USING A TWO-SHAFT
TABLE LOOM**

BY

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Abstract

Pattern drafting is the technical details that precede every woven fabric. Pattern drafting enables the weaver or designer to have foreknowledge or to forecast the intended fabric to be produced. It gives the weaver a deeper understanding of the weaving process and eventually enables him or her to produce completely original designs. However, most Nigerian textile designers seem to ignore this aspect of drafting because of the technicalities involved. This paper discusses the pattern drafting of warp and weft colour alignment designs during their conversion to woven fabric. The paper also presents a theoretical transcription of the technical details behind some selected woven samples for easy understanding of textile designers and readers. The studio exploratory method was adopted, highlighting all the stages of production. The studio activities have revealed that intense technicalities are well underway before the emergence of the woven fabric. This paper is significant because it would be a very useful resource material to textile designers, small and medium-scale textile industries, researchers and skill acquisition centres.

Keywords: Pattern Drafting, Warp and Weft, Colour Alignment Designs, Transcription And Conversion, Two-Shaft Table Loom

Introduction

Pattern drafting is very sacrosanct in the fabric weaving process as it enables the weaver or designer to forecast the intended fabric to be woven. In pattern drafting, the weaver or designer works out the intended design accurately on point paper (graph paper) before he or she sets up the loom. This is necessary because it enables the weaver or designer to keep accurate records of all

her woven fabrics. It gives the weaver or designer a deeper understanding of the weaving process and eventually enables her to produce completely original design works. A careful study of pattern drafting helps the designer or weaver to understand and develop new original designs for production and aids her in the analysis of the weaver structure. As stated by Chetwynd (1969:7), “drafting on graph paper is an important method of bridging the gap between the original design idea and the actual fabric. According to her, it is frustrating for the weaver if he is unable to try an idea because he does not know how to thread the loom for it. he can also try out designs on graph paper when no loom is available”. As stressed by Chetwynd (1973:60), “the weaver should preserve, if knowledge and attempt to record all his or her work on point paper (graph paper). This not only enables the weaver to keep a record of work, but gives him or her much deeper understanding of weaving and eventually enables him or her to produce completely original design work”. Similarly, Bird (1974:28) opines that “pattern drafts are usually plotted on graph paper, so that one may see the design as it will appear on the face of the fabric.

Processes of Creating Warp and Weft Colour Alignment Pattern Drafting for a Two-Shaft-Table Loom

Creating warp and weft colour alignment pattern drafting for a two-shaft table loom involves a lot of technical processes. These processes are the threading draft, treadling draft, shedding of the two-shaft table loom and the weave plan.

Threading Draft: This refers to the spaces between the horizontal lines that represent the two shafts (harnesses) when facing the loom from the front (Gyampoh, 2012). The shaft (harness) nearest to the weaver or designer is called shaft (harness) one (1), and the shaft (harness) farther away from the weaver or designer is called shaft (harness) two (2). The mark in the square between the horizontal lines indicates the heald (heddle) on the shaft (harness) through which the thread should be placed.

Treadling Draft: The crosses in the squares between the horizontal lines indicate which shafts (harnesses) should be raised or lowered individually for weaving. As explained by Osaigbovo (2015:55), this is achieved on the two-shaft table loom through a roller-reversing motion.

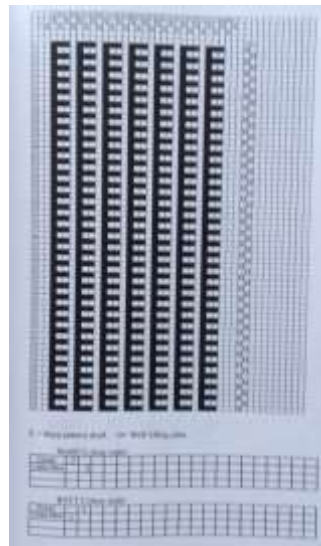
Shedding of the Two-Shaft Table Loom: this means the order in which the roller reversing motion of the two-shaft table loom with a stopper is used or operated for each weft thread in the pattern. The roller reversing motion, when turned away from the weaver, shaft one is raised and when the roller reversing motion is turned towards the weaver, shaft two is raised and shaft one is lowered and vice versa.

Weave Plan: This shows a detailed plan of the pattern, indicating which warp and weft colour order (warp and weft colour alignments) are combined to give the weave plan. The arrangement of colours with plain weave can change the appearance of the plain weave structure entirely. See Figure 1 for the explanation of the threading draft, treadling draft, shedding of the two-shaft table loom and the weave plan.

Pattern Drafts for Warp and Weft Colour Alignments

Some of the pattern drafts produced and transcribed for the purpose of making the paper explicit are shown as follows:

Figure 1



a. Figure 1

1. Indicate the warp threads, A, B, C, D, for 1 (one) repeat for the warp colour order

2. Indicate the number of the weft threads 1 to 52, 1 indicating the first weft thread and 2 indicating the second weft thread. Weft threads 1 to 2, end one repeat of the weft colour order.
3. Mark out the warp and weft colour order. Call these colours BLACK and WHITE for easy working. In Figure 1, the warp colour order is:

2 Black 2 White

Indicated by the vertical lines and spaces under the threading draft. The weft colour order is:

1 Black 1 White

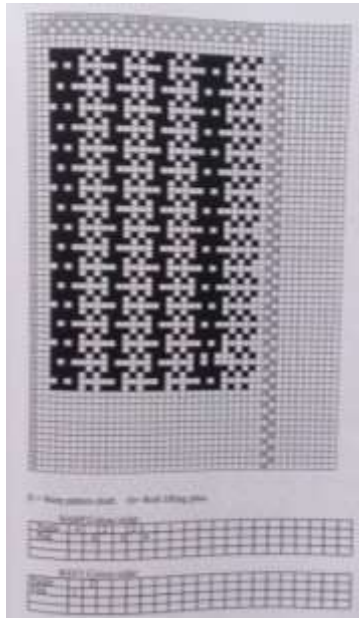
Indicated by the horizontal lines and spaces besides the weave plain as shown:

4. Start reading across the first weft thread numbered 1 in the weave plan
5. Square 1A shows weft on the face of the fabric. Since the weft is black, fill in square 1A black.
6. Square 1B shows warp on the face of the fabric. Since the warp is black, fill in square 1B black.
7. Square 1C shows weft on the face of the fabric. Since the weft is black, fill in square 1C black.
8. Square 1D shows warp on the face of the fabric. Since the warp is white, fill in square 1D white.

b. Figure 1

1. Read across the second weft thread numbered 2 in the weave plan
2. Square 2A shows warp on the face of the fabric. Since the warp is black, fill in square 2A black.
3. Square 2B shows weft on the face of the fabric. Since the weft is white, fill in square 2B white.
4. Square 2C shows warp on the face of the fabric. Since the warp is white, fill in square 2C white.
5. Square 2D shows weft on the face of the fabric. Since the weft is white, fill in square 2D white.

Figure 2



To construct the colour and weave draft for figure 2, the researcher adopted the methods as stated below.

1. Indicate the warp threads, A, B, C D, E, F, G, H for 1 (one) repeat for the warp colour order.
2. Indicate the number of the weft threads 1 to 52, 1 indicating the first weft thread and 2 indicating the second weft thread. Weft threads 1 to 5, end one repeat of the weft colour order.
3. Mark out the warp and weft colour order. Call these colours BLACK and WHITE for easy working. In figure 2, the warp colour order is:

4 Black 4 White

Indicated by the vertical lines and spaces under the threading draft. The weft colour order is:

2 Black 1 White

1 Black 1 White

Indicated by the horizontal lines and spaces besides the weave plain as shown:

4. Start reading across the first weft thread numbered 1 in the weave plan
5. Square 1A shows weft on the face of the fabric. Since the weft is black, fill in square 1A black.
6. Square 1B shows warp on the face of the fabric. Since the warp is black, fill in square 1B black.

7. Square 1C shows weft on the face of the fabric. Since the weft is black, fill in square 1C black.
8. Square 1D shows warp on the face of the fabric. Since the warp is black, fill in square 1D black.
9. Square 1E shows weft on the face of the fabric. Since the weft is black, fill in square 1E black.
10. Square 1F shows warp on the face of the fabric. Since the warp is white, fill in square 1F white.
11. Square 1G shows weft on the face of the fabric. Since the weft is black, fill in square 1G black.
12. Square 1H shows warp on the face of the fabric. Since the warp is white, fill in square 1H white.

b. Figure 2

1. Read across the second weft thread numbered 2 in the weave plan
2. Square 2A shows warp on the face of the fabric. Since the warp is black, fill in square 2A black.
3. Square 2B shows weft on the face of the fabric. Since the weft is black, fill in square 2B black.
4. Square 2C shows warp on the face of the fabric. Since the warp is black, fill in square 2C black.
5. Square 2D shows weft on the face of the fabric. Since the weft is black, fill in square 2D black.
6. Square 2E shows weft on the face of the fabric. Since the weft is white, fill in square 2E white.
7. Square 2F shows weft on the face of the fabric. Since the weft is black, fill in square 2F black.
8. Square 2G shows weft on the face of the fabric. Since the weft is white, fill in square 2G white.
9. Square 2H shows weft on the face of the fabric. Since the weft is black, fill in square 2H black.

c. **Figure 2**

1. Start reading across the third weft thread numbered 3 in the weave plan
2. Square 3A shows weft on the face of the fabric. Since the weft is white, fill in square 3A white.
3. Square 3B shows warp on the face of the fabric. Since the warp is black, fill in square 3B black.
4. Square 3C shows weft on the face of the fabric. Since the weft is white, fill in square 3C white.
5. Square 3D shows warp on the face of the fabric. Since the warp is black, fill in square 3D black.
6. Square 3E shows weft on the face of the fabric. Since the weft is white, fill in square 3E with white.
7. Square 3F shows warp on the face of the fabric. Since the warp is white, fill in square 3F with white.
8. Square 3G shows weft on the face of the fabric. Since the weft is white, fill in square 3G white.
9. Square 3H shows warp on the face of the fabric. Since the warp is white, fill in square 3H with white.

d. **Figure 2**

1. Start reading across the fourth weft thread numbered 4 in the weave plan
2. Square 4A shows warp on the face of the fabric. Since the warp is black, fill in square 4A black.
3. Square 4B shows weft on the face of the fabric. Since the weft is black, fill in square 4B black.
4. Square 4C shows warp on the face of the fabric. Since the warp is black, fill in square 4C black.
5. Square 4D shows weft on the face of the fabric. Since the weft is black, fill in square 4D black.
6. Square 4E shows warp on the face of the fabric. Since the warp is white, fill in square 4E with white.
7. Square 4F shows weft on the face of the fabric. Since the weft is black, fill in square 4F black.

8. Square 4G shows warp on the face of the fabric. Since the warp is white, fill in square 4G white.
9. Square 4H shows weft on the face of the fabric. Since the weft is black, fill in square 4H black.

e. Figure 2

1. Start reading across the fifth weft thread numbered 5 in the weave plan
2. Square 5A shows weft on the face of the fabric. Since the weft is white, fill in square 5A white.
3. Square 5B shows warp on the face of the fabric. Since the warp is black, fill in square 5B black.
4. Square 5C shows weft on the face of the fabric. Since the weft is white, fill in square 5C white.
5. Square 5D shows warp on the face of the fabric. Since the warp is black, fill in square 5D black.
6. Square 5E shows weft on the face of the fabric. Since the weft is white, fill in square 5E white.
7. Square 5F shows warp on the face of the fabric. Since the warp is white, fill in square 5F white.
8. Square 5G shows weft on the face of the fabric. Since the weft is white, fill in square 5G white.
9. Square 5H shows warp on the face of the fabric. Since the warp is white, fill in square 5H white.

Figure 3



1. Indicate the warp threads, A, B, C D, E, F, G, H, I, J, K, L, M, N for 1 (one) repeat for the weave plan as shown.
2. Indicate the number of the weft threads 1 to 52, 1 indicating the first weft thread and 2 indicating the second weft thread. Weft threads 1 to 2, end one repeat of the weft colour order.
3. Mark out the warp and weft colour order. Call these colours BLACK and WHITE for easy working. In figure 3 the warp colour order is:

4 Black 4 White
2 Black 4 White

Indicated by the vertical lines and spaces under the threading draft. The weft colour order

is:

1 Black
1 White

Indicated by the horizontal lines and spaces besides the weave plain as shown:

4. Start reading across the first weft thread numbered 1 in the weave plan
5. Square 1A shows weft on the face of the fabric as illustrated. As the weft is black, fill in square 1A black.
6. Square 1B shows warp on the face of the fabric. As the warp is black, fill in square 1B black.
7. Square 1C shows weft on the face of the fabric. Since the weft is black, fill in square 1C black.
8. Square 1D shows warp on the face of the fabric. Since the warp is black, fill in square 1D black.
9. Square 1E shows weft on the face of the fabric. Since the weft is black, fill in square 1E black.

10. Square 1F shows warp on the face of the fabric. Since the warp is white, fill in square 1F white.
11. Square 1G shows weft on the face of the fabric. Since the weft is black, fill in square 1G black.
12. Square 1H shows warp on the face of the fabric. Since the warp is white, fill in square 1H white.
13. Square 1I shows weft on the face of the fabric. Since the weft is black, fill in square 1I black.
14. Square 1J shows warp on the face of the fabric. Since the warp is black, fill in square 1J black.
15. Square 1K shows weft on the face of the fabric. Since the weft is black, fill in square 1K black.
16. Square 1L shows warp on the face of the fabric. Since the warp is white, fill in square 1L white.
17. Square 1M shows weft on the face of the fabric. Since the weft is black, fill in square 1M black.
18. Square 1N shows warp on the face of the fabric. Since the warp is white, fill in square 1N white.

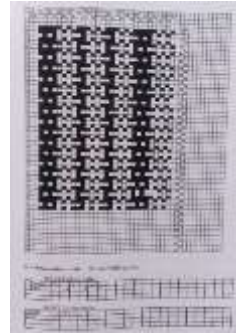
b. Figure 3

1. Read across the second weft thread numbered 2 in the weave plan
2. Square 2A shows warp on the face of the fabric. Since the warp is black, fill in square 2A black.
3. Square 2B shows weft on the face of the fabric. Since the weft is white, fill in square 2B white.
4. Square 2C shows warp on the face of the fabric. Since the warp is black, fill in square 2C black.
5. Square 2D shows weft on the face of the fabric. Since the weft is white, fill in square 2D white.
6. Square 2E shows warp on the face of the fabric. Since the warp is white, fill in square 2E white.
7. Square 2F shows weft on the face of the fabric. Since the weft is white, fill in square 2F white.
8. Square 2G shows warp on the face of the fabric. Since the warp is white, fill in square 2G white.
9. Square 2H shows weft on the face of the fabric. Since the weft is white, fill in square 2H white.
10. Square 2I shows warp on the race of the fabric. Since the warp is black fill square 2I black.
11. Square 2J shows weft on the face of the fabric. Since the weft is white fill square 2J white.

12. Square 2K shows warp on the face of the fabric. Since the warp is white fill square 2K white.
13. Square 2L shows weft on the face of the fabric. Since the weft is white fill square 2L white.
14. Square 2M shows warp on the face of the fabric. Since the warp is white fill square 2M
15. Square 2N shows weft on the face of the fabric. Since the weft is white fill square 2N.



Type of loom- Two-Shaft Table Loom (Roller Reversible)
 No of Shafts- 2
 No of Healds Per Shaft – $72 \times 2=144$
 Reed Count – 3 ends per cm
 Yarn Type – Acrylic
 Cloth Width 15cm
 Cloth Length – 15cm
 Warp Colour Order -2Green, 2 Golden Yellow
 Weft Colour Order – 1 Green, 1 Golden Yellow



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 No of Healds Per Shaft – $72 \times 2=144$
 Reed Count – 3 ends per cm
 Yarn Type – Acrylic
 Cloth Width 15cm
 Cloth Length – 15cm
 Warp Colour Order -4Purple, 4 Pink, 2 Purple, 4 Pink, 2 Purple, 4 Pink
 Weft Colour Order – 2 Purple, 1 Pink



Type of loom- Two-Shaft Table Loom (Roller Reversible)
 No of Shafts- 2
 No of Healds Per Shaft – $72 \times 2=144$
 Reed Count – 3 ends per cm
 Yarn Type – Acrylic
 Cloth Width 15cm
 Cloth Length – 15cm
 Warp Colour Order -4Purple, 4 Pink, 2 Purple, 4 Pink, 2 Purple, 4 Pink
 Weft Colour Order – 2 Purple, 1 Pink

The paper concludes that pattern drafting in textile design remains a core area that precedes the weaving proper.

Conclusion

The paper concludes that pattern drafting is very crucial in the area of fabric construction as it enables the weaver to keep an accurate record of work for reference purposes. Hence, it is regarded as the core area that precedes weaving, that eventually aids replication of the woven fabric designs when the need arises. Transportation of each pattern draft in this paper is an attempt to explain the movement of each of the warp and weft yarns on the loom for a better understanding of textile designers. The technical details, simply explained and clearly understood by the textile designers, would enable them to set their two-shaft table looms and produce their woven fabrics based on the pattern drafts some warp and weft colour alignments pattern drafts were created and few of them were transcribed to reveal the technical details before converting them to woven fabrics. This paper has contributed to knowledge as it has revealed the technicalities involved in the creation of woven fabrics. It is hoped that textile designers, textile students as well as small scale textile cottage industries would find this paper as a useful reference material for taking accurate records for their woven fabric designs.

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