EXPLORATION OF HAUSA TRADITIONAL MAT WEAVING FOR CONTEMPORARY WINDOW BLINDS USING PALM FRONDS

BY

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DECLARATION

I hereby declare that this thesis is purely a record of my own research work (except where references are made to published literature and where assistance is acknowleged). This work has not been presented for the award of any other degree.

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22-11-13
Date

CERTIFICATION

This thesis titled, **"EXPLORATION OF HAUSA TRADITIONAL MAT WEAVING FOR CONTEMPORARY WINDOW BLINDS USING PALM FRONDS"** by Beauty Erezi Ogbogo meets the regulations governing the award of the degree of Master of Art (M.A) in Industrial Design of Ahmadu Bello University, Zaria. It is approved for its contributions to knowledge and literary presentation.

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DEDICATION

This thesis is dedicated to:

* My late Father; Mr. Michael Ogbogo, who departed from the world some years ago and left me in the care of the Almighty God.
* My beloved mother, Mrs. Catherine Ogbogo whose fervent prayer for my life has contributed immensely to the success of this study.
* My dear uncle Mr. Jesse Osima, whose care and financial support have helped me in making my education a success.

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ABSTRACT

The title of this thesis is "Exploration of Hausa traditional mat weaving for contemporary window blinds, using palm fronds" by Beauty Erezi Ogbogo.

Weaving is an art that has been practised from pre-historic times. There are two types of weaving: the loom and off-loom weaving. Off-loom weaving involves the manipulation of materials with the fingers to form a structure. The Hausa traditional mat weaving is an off-loom weaving that has been in existence over a long period of time. Unfortunately, the beliefs and traditions of the Hausa mat weavers, have made them to become reluctant, if not resistant to changes and innovations in the craft.

This work is therefore an attempt to explore the possibility of using the Hausa traditional mat weaving for contemporary window blinds. The same basic raw material used by the traditional craftsmen which is the palm frond would still be used.

The problems of this study are:

The exploration of the Hausa traditional mat weaving crafts to highlight possible innovations and improvements;

- Adaptation of the local mat into use as contemporary window blinds and

The development of a product design based on the creative potential of the traditional mat that could be appreciated by both the middle and high classes of people in the society.

The objective of the study are to:

Document the production process of the Hausa traditional mat weaving crafts.

*. Offer suggestions that would help to improve on the production technique and enhance the quality of the finished product;

*. Produce contemporary designs for window blinds that would be made from palm fronds, using the Hausa traditional mat weaving technique;

*. Examine the aesthetic qualities of the sample weaving produced from the designs made and

*. Produce contemporary window blinds using a selected design.

The procedure that was adopted in the production of the window blinds is as follows:

1. Processing of the raw materials to be used in weaving of the mats;
2 Drafting of model design drawings of mats before weaving is done;
3 Weaving, using both the drafted and undrafted designs,
4 Analysis of the mat samples produced and
5 Selection of the most aesthetically pleasing design for the production of model blinds.

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DEFINITION OF TERMS

LOOM — A device use to facilitate the weaving of two sets of threads into cloth.

OFF-LOOM WEAVING — A catch-all phrase, meaning the use of non-loom (e.g. finger and plaiting) techniques to create woven sructure.

GALURA — Hausa word for local dye stuff.

KAJINJIRI — Hausa name for palm-fronds

TABRUMA — Hausa name for mat.

RAYAN — Hausa name for certain plant root from which yellow dye can be obtained.

FIBRE — Any single thread-like strand of animal, vegetable, mineral or sythetic origin from which fabric (cloth) is made.

SHED — A weaving term, meaning the v — shaped openning or separation formed by raising and/or lowering the warp end (length wise thread) so that the weft (horizontal thread) can pass through them in order to interlace and form cloth.

WARP — The thread running lengthwise on a loom or a piece of fabric

CHAPTER I

1.1. INTRODUCTION

Man, since pre-historic times has been engaged in technological development in his bid to meet his needs from materials that nature has freely bestowed upon him. Weaving is a technological advancement that gives man fabric, which he has put into so many different uses. Weaving could be divided broadly into loom and off-loom. Mat making is an aspect of off-loom weaving that involves the finger manipulation of certain materials to form a structure . The various ethnic groups in Nigeria engage in the production of mat in one form or another, using materials available to them in their localities. Some of these materials are raffia, bamboo, palm fronds, grass and straw. The mat has various uses it is put to in Nigeria : it serves as material for fencing, seating, praying and sleeping, as well as floor and table cover.

In the Hausa speaking area of Nigeria, the material most commonly used in mat production is the palm frond. The weaving is usually done in strips which are between 10 and 15 centimetres wide. They are later sewn or joined together to make a full mat. Presently, the Hausa traditional mat weaving craft is not flourishing as it used to do. This is not due to a decline in the quality of the products, but for reasons which are outlined below:

* The Hausa mat making is practised by the traditional craftsmen and women who are mainly engaged in the production of sleeping mats. As they are so strongly tied to their traditions and belief, they hold tenuously to the patterns and techniques which have been passed on from one generation to the other. Intellectual productivity in the craft is therefore at a standstill, as they strictly keep to the same product, design and colour scheme as if it were a creed. We therefore witness no improvement in the aesthetic quality of their product. Their need to preserve this traditional craft intact for posterity has made their product to become aesthetically obsolete.

* There is stagnancy in the mat weaving craft as the practitioners could not do any documentation of the techniques, since they do not possess formal education. An impediment is thus created in the path of students, textile experts and other creative people who would have shown interest in the craft. There is therefore no research into the traditional technique, neither has it been explored for the production of some other useful products which would be in high demand.

* The demand for the Hausa traditional mat has become low, Since people could now more easily afford to purchase beds and mattresses, which are more commonly used as sleeping materials than the mat. The mat has thus lost its major market. It is only the low income earners that now patronise the craft mainly ,as they still use the product as a sleeping material.Since the economic prospects for the people engaged in this trade as it is presently practised looks dim, people are becoming more and more reluctant to take up mat weaving as a profession.

To keep the mat weaving craft alive and maintain a sizeable patronage from the purchasing public, there is a need to adapt the Hausa traditional mat weaving technique for popular items in interior decoration, such as window blinds. Conducting a research that explores the technique and improves the quality of the Hausa mat designs, in order to make its products relevant in contemporary life, will be significant. Some of the benefits that would immediately accrue include:

- A resuscitation of the mat weaving craft as the products will be in demand once again,not only by the low income earners, but also by people in the middle and upper income bracket of the society.

- The creation of an upsurge of interest in the craft as more people including textile designers, students and many other people will be drawn to engage in it. They will be so encouraged because of the new vistas for marketing of the finished products that would have been opened.

- Any nation that desires to attain sustainable growth must fully explore and develop her raw material base. This must not be limited to only raw materials for such heavy industries as Iron and Steel, Aluminium and Petrochemicals. Exploration of local raw materials to be used in cottage industries should be encouraged as it will not only tap the creative potentials of the populace, but will in no small way contribute to the revival of our collapsing economy.

Besides, the present poor state of the Nigerian economy calls for the demonstration of creativity and encouragement of existing industries that use local raw materials. This study is therefore a response to this call.

- During periods of economic decline, like we are presently going through, there is the multiplication of social problems as an appreciable proportion of the working population are not gainfully employed. This situation cuts across the various segments of the society and includes the graduates, young school leavers, elderly persons and pensioners. All these groups of people could be gainfully employed, if a deliberate attempt is made to encourage the development of bold initiatives like the one being explored by this work.

- In the Hausa speaking area of this country, we have a group of people who are unemployed but could be involved in some productive endeavours. This group includes all persons that have one form of physical disability or the other . They are now mainly engaged in begging for alms. Whereas, most of these persons could be gainfully employed in trades, such as, mat weaving.

- Nigerians are yet to particularly recognise the significant role that crafts could play in the building of a developing economy like ours. According to Cardew and Pupil (1983), local craft

industries are the key factor in the search for self reliance in a developing country. Therefore, by incorporating Hausa traditional mat weaving into contemporary life will not only help to sustain the art, but will be Nigeria's contribution towards the production of interior decoration items for used in such places as conference rooms, banquet halls, luxurious hotels and houses.

1.2 STATEMENT OF THE PROBLEM

The intent or aim of this study is to explore the Hausa traditional mat weaving, in order to improve on the aesthetic qualities and design of its product (mat). This study will attempt to explore how to convert the mat, from its present use as a sleeping materials, to the production of contemporary window blinds. It is hoped that the product design that will be evolved would be well appreciated by the various segments of the society, including the members of the middle and upper classes. The product developed should meet the needs of all the classes of people.

1.3 MOTIVATION FOR THE RESEARCH

This research was motivated by the following factors:

i. The desire to explore the Hausa mat weaving techniques in order to improve on the aesthetic qualities of the designs and its products, which could thereby motivate

others to delve into it, so as to save the craft from going into extinction.

ii. A desire to convert the local mat from its original usage into contemporary interior decoration items. Its products could then have an appeal that cuts across all segments of society.

iii. The abundance of the relevant raw materials, the palm fronds and local dyes (Galura).

iv. The possibility of opening outlets for such people as the unemployed school leavers, physically handicapped and pensioners to be economically self-reliant. An avenue is thus opened for them to positively channel their creative energies in producing items that would evolve through the development of the local raw material-palm frond.

v. Examine the possibility of producing contemporary window blind with the Hausa mat.

vi. To contribute to the general advancement of knowledge by documenting the Hausa mat weaving technique.

1.4 OBJECTIVE OF THE STUDY

The objectives of this study are to:

i. Document the production process of the Hausa traditional mat weaving craft.

ii. Offer suggestions that would help to improve on the production technique and enhance the quality of the finished product.

iii. Produce contemporary design for window blind that would be made from palm fronds, using the Hausa traditional mat weaving technique.

iv. Examine the aesthetic qualities of the sample weaving produced from the designs made and

v. Produce contemporary window blinds using a selected design.

1.5 BACKGROUND AND SIGNIFICANCE OF THE STUDY

Generally, very little academic work has been done in the area of mat weaving. For this craft not to go into extinction, there is the need to take a closer look at it, so as to suggest ways of boosting its productivity and further popularizing the art.

The Hausa traditional weaving technique could be explored for the production of various functional and decorative products. These could possess valuable aesthetic qualities that could generate a high sales volume for its products, not only in Nigeria, but also in order parts of the world. However, as already stated, textile experts are yet to do any serious academic probe into the mat weaving craft. There is therefore an absence of documentation of its techniques, resulting in stagnancy of development in the craft. This has produced a disincentive to creative people, who

other wise would have taken a co-operative advantage of exploring this technique for industrial purposes.

Writing on "Hopeful on Nigerian economy", Prince Charles (The Democrat, March 22, 1990) affirms that , although there are intractable problems, he was optimistic that Nigeria will overcome them. He hinges his hope on the many educated, intelligent and creative people abounding in the nation. The major aim of this study could therefore be said to be a contribution towards the realisation of this, as it will open our eyes to the potentially exciting and influential economic future that lies ahead. It would make us see the contribution we must make to realise the fore-mentioned. This study will seek to provide a lead in this direction.

Mat weaving is a local technology, which needs serious encouragement and improvement. This research would therefore be significant as it seeks to enlighten people about the Hausa traditional weaving technique and how it can be explored, particularly for the production of contemporary window blinds for use in interior decoration.

It will also attempt to expose the immense cultural value of the local craft. When successful completed, this study might stir up the interest of other textile experts, students and creative individuals to rise to the challenge of exploring this local technology for the production of some other functional and aesthetic products. In addition, it would enhance individual proficiency and production. It

would also provide an outlet for creativity and intellectual development.

Furthermore, it would provide job opportunities for school leavers, pensioners and the physically handicapped, who could be challenged to invest their creative potential in exploring this aspects of local weaving and thereby make a living.

This study will be of benefit to the nation, in that it would point to neglected areas which offer great potential towards improving the economy. Since the products developed would be of exportable value, they could help to increase our foreign earnings and reserves. It would also enhance the standard of living of the people engaged in this craft.

1.6 LIMITATIONS

i Language barrier: since this study will be conducted within Kaduna, the researcher being a non-Hausa speaker, could have the problem of oral information during interviews not being correctly interpreted.

ii Another limiting factor is time. The possibility of travelling round all places where the craft is practised to obtain information within the scheduled time for this study is very remote.

iii The informants may be passive and reluctant to provide useful and authentic information in respect of the weaving

technique. It is a well known phenomenon, true today as in the past, that artisans engaged in small scale industrial crafts tend to conceal what they consider to be their occupational secrets. This they do, mainly to protect their livelihood, which they erroneously believe would be threatened, if they reveal the methods or formulas on which the trade is based.

iv. As scanty academic work has been done in this area, literature on the craft is virtually non-existent. Where some information is available, they are restricted to photographs of the weavers or products only, with little or no information given on the production processes.

1.7 DELIMITATION

For the purpose of an intensive study, materials selected for this study and all information are delimited to areas within Kaduna metropolis.

1.8 BASIC ASSUMPTION

The following are some of the basic assumptions:

i. That the palm fronds would be suitable or serve as a good material for the production of mat-window blinds.

ii. That the mat-blinds would meet the requirement of window blinds.

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CHAPTER II

2.0 LITERATURE REVIEW

Observation has revealed, that most African arts and crafts have been greatly neglected in academic circles. Hardly can one find written records or literature on them, even in books written by African authors. Aboderin (1984), collaborated this position and made reference to Wangboje's observation, that some African writers have neglected vital aspects of African art and craft, regarding them as "minor art". There is hardly any literature on them available for use by the serious student of African art. This is true of the Hausa traditional mat weaving craft.

The documentary or writing interest of most of our African textile experts seems to have been directed only towards textile manufacturing processes of the tie-dye, batik, as well as loom hand-woven textile (cloth weaving). A review of available literature has shown that, little attention has generally been given to Nigeria's mat weaving craft. The few persons, who have shown little interest or appreciation for the craft of weaving, have ventured only as far as taking photographs of the mats. Therefore, we can hardly found any book on the Hausa traditional mat weaving. In fact, there seem to be a complete negligence of the craft and ignorance of the technique. The apparent lack of interest in the development of this craft could, if not immediately reversed, eventually lead to its extinction.

This chapter therefore, will review essential literature on related areas of study. It will examine the mat as an off-loom weaving product and its usage as curtains. Specifically, this chapter will address the following:

- The origin of off-loom and loom weaving.
- Classification of fibres.
- Materials for off-loom weaving.
- Mat.
- Dyes.
- Curtains.
- Use of mat as curtains and blinds.

2.1 THE ORIGIN OF OFF-LOOM AND LOOM WEAVING

Sander and Digdy-Firth (1977), stated that weaving is one of the most ancient and fundamental crafts, which developed independently in many different parts of the world. According to Znemierowski (1973), the history of weaving dates back to 20,000 years or more, and that the early man first used the weaving process by criss-crossing and intertwinning twigs, reeds and rushes.

The origin of off-loom weaving could be traced back to the primitive time. It is a technique of weaving that involves the creative manipulation of certain materials with the fingers or hands to form a structure. Thus, mat making first developed since it did not require the use of any

machine (the loom). According to Rainey (1966), man first wove a few threads together with the only tool available to him then- his fingers and later developed patterns. Man made advances when he applied colour to improve the aesthetic qualities.

The primitive or pre-historic man learnt to weave long before the invention of the loom and machines for weaving. Although it is difficult to determine which fibres were used during the pre-historic times, it seems evident that weavers employed all the available materials in their environment: hemp,raffia, leaf, fibres, hairs, woods, strips of fur, sinew and all animal hairs were used to spin weaving yarns. The following are some off-loom techniques that pre-dated the invention of loom weaving as stipulated by Held, (1978).

- Felting: This involves the interlacing of loose fibres by a process that combines heat, moisture and pressure.

- Basketry: This is the process of making objects from various semi-rigid vegetable materials, such as grasses, rushes, reeds and sticks.

- Netting: Netting is a looping and knotting technique done on a single continous strand. It is rudimentary form of lace making.

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- Sprang: Sprang involves a set of stretched parallel yarns twisted upon one another. The warp ends are twisted to form a lace-like structure.

- Matting: This involves fabric made from pounded bark.

According to Torbet (1980), loom is a device used to facilitate the weaving of two sets of thread into cloth or structure. The origin of loom weaving could be traced to the non-loom process. Rainey (1976), stipulates that, throughout the centuries of evolution that followed the pre-historic period, man developed his skill in weaving. As this happened, man wished to spread the weaving process. Instead of using his fingers to raise each thread, he discovered that he could insert a rod under certain threads and raise all of them at the same time. By using more than one rod, he found that patterns could be formed even faster.

With advancement over time, the loom continued to evolve and became intricate. A device called harness was later invented to raise and lower the warp threads automatically. This resulted in the production of new materials and development of complicated machines and looms. Waller (1973), observes the use of these complex equipement as the weaver's servant.

However, with all of man's mechanical methods or devices of weaving, the off-loom technique still does

survive as a useful craft not only in Nigeria, but also in many other countries. It is widely practiced in Nigeria by different ethnic groups. The Jebba and Kaje groups of southern Zaria produce the off-loom sleeping mat, called Bet-Nyei; the Ipoti and Mopa of Kwara State specialise on plain mat and baskets; the Isoko, Ijaw and Bini in Delta and Edo States produce fishing nets, sieves,mats and cane weaving of different types. Kaduna people produce various kinds of off-loom weaving products, such as : sleeping mat, called Taburma, straw hat, table mats, lids, cane baskets and a host of other off-loom weaving products. Numerous off-loom weaves are being produced in some other parts of Nigeria as well.

Some other people engaged in off-loom weaving are the Indians. James (1973), records basket-making as a common industry with most Indians of the American continent; and that it was almost entirely done by the women. He further remarks that, an intelligent study of the Indian baskets, revealed the skillfulness in the art,patience, aesthetic qualities of mind, conception of art, and a host of other things in the life of the Indian women.

Rainey (1976), also agrees that off-loom weaving survives among the craftsman in United States and other countries. He states in addition that, the technique offers an exciting and new challenge to those who seek to explore it.

2.2 CLASSIFICATION OF FIBRES

Torbet (1980), defines fibre as a threadlike filament, which can be spun or woven. Held (1978), classifies fibres into natural and man-made. Natural fibres according to him are derived from living and growing things. They are divided into vegetable, animal and mineral fibres. He describes man-made fibres as manufactured fibres. They are created in the laboratory, but composed partly of vegetable materials and manufactured fibres. His classification of both the natural and man-made fibres is as follows:

NATURAL FIBRES

Vegetable (Cellulosic) Fibres: pineapple, reed, grass, hemp, bamboo, raffia (palm leaf), seed, hairs, cotton, kapok, bast (stem) fibres, leaf fibres, jute, sisal, flax, bark and root.

Animal (protein) fibres: wool, sinews, silk, hair from animals like cow, horse, dog, rabbit and buffalo etc.

Mineral fibres: aluminium, gold, silver, asbestos, etc.

MAN-MADE FIBRES

- Cellulosic Fibres: viscose, acetate rayon, etc.

- Mineral fibres: glass.

- Protein Fibres: azlon.

- Modified Cellulosic Fibres. acetate, triacetate

- Synthetized Fibres: nylon polyester(dacon, etc.) acylilic (scrilan etc), Modacrylic dytril, rubber, savan, vinyon.

Oguntona (1986), divides fibres into the following categories: Natual,Regenerated,Bast and Synthetic. In summary, his explanation of these classes of fibres is as follows:

* Natural Fibres: These are fibres made from natural sources. He emphasises that although all plants contain fibres, only a few prove useful and durable to meet textile requirements.e.g silk, wool,cotton and linen.
* Bast Fibres: These are fibres obtained from barks (or bast) of stems of dicotledenous plants by way of retting or decortication. Examples are flax, jute, sisal.
* Synthetic Fibres: These are man-made fibres that are artifically prepared from materials of the nature of plastics. They can be made from natural fibres or from petroleum and coal-tar. Synthetic

fibres are further divided into Polyamide, Polyesters and Polyacrylanitrils.

* Regenerated Fibres: These are made from a process that involves a method of extruding viscous liquid, through small jets with the liquid solidifying or coagulating at once to form a fibre.

Helds (1978), advises that the contemporary weaver should not restrict himself only to the use of classic yarns. He should experiment with different kinds of non-fibrous materials, both natural and synthetic, in order to achieve the expression he seeks. He however, suggests that weavers should experiment with the following natural materials: corn husks, cat-tails, seaweed, river cane, feather, grasses, pine needle, shells and palm fronds.

2.3 MATERIALS FOR OFF-LOOM WEAVING:

Different kinds of materials are employed for this type of weaving. Generally, materials for off-loom weaving include both synthetic and natural fibres.These materials are available everywhere in one form or the other. Rainey (1976), states that some of the raw materials for off-loom weaving are:

* Raffia
* Cane
* Grasses
* Cords
* Leather
* Cellophane

* Reeds
* Yarns
* Leaves
* Rattans
* Palm fronds
* Ribbon
* Wools
* Cardboard paper
* Nylon cut into strips
* Fabric cut into strips

2.4 MAT

Wulff (1966), believes that the weaving of reed and grass into mats and baskets is an activity even older than every other type of weaving. He was of the opinion that, specimens found in Iraq must have probably been made at about 5000 B.C. He further states that mat weaving was still an important craft in Persia, for ceiling and construction of mud roofed houses.

According to Nsugbe (1962), mat serves many purposes such as beds, carpets, seats, ceiling boards and materials for fencing. They can also be woven into boxes, raincoats, hats and many other sundry items. That several kinds of palm leaves, such as the fronds of the dum palm (hypeane thebaca) and the deleb palm (borassus flabellifer) undergo some simple processes and are used in the production of mats.

Thornton (1978),notes that in the sixteenth century, rush matting was the earliest form of fitted carpeting, which came in plaited strips, and so could be made into any size and fitted to the room. Materials used as carpet

today did not seem to have come into existence until sometime in the second half of the eigthteenth century. In France, during the seventeenth century, straw and rush mats were commonly laid on floor; and in 1624, matting was commonly practised in England. He reported of matted galleries in Chatsworth and some other places that had mats that were both plain and coloured.

He made reference to Pepy's remark about one beautiful African mat found in London in 1666, which was said to be very suitable for carpet. He also mentioned that in 1641, mattresses for sleeping were commonly laid on mats supported on a network of ropes.

Mats made by women in Djibo in Upper Volta (now Burkina Faso) were made with reed and dried bullrushes as recorded by Sieber (1980). They were so artfully woven with fingers and tightly woven that wind, light or rain could not penetrate them. They were primarily used as sleeping mats, but served other purposes as well. It was stated that, in Burkina Faso in 1623, it was the only medium of exchange.

He noted that in Eastern Congo River, Mat-making from reeds, papyrus, grass and bamboo was one of the most important industries. The mat was used as bed and chair, and no one travelled without his mat on which he slept and sat during the day. He describes some mats made from the Eastern Congo River, as "Curious Mats". They were made of rushes and reeds, and were dyed in several colours. That

highly decorated mats made by the Tetela Zaire and Kuba were prestige items reserved for chiefs. They served as tapestries and carpets.

He remarked that mat weaving had been in existence for at least five hundred years before the Europeans came into Africa. Excavations at Igbo-Ukwu in Eastern Nigeria, revealed that, as early as the ninth century, the floor of the burial chamber of the priest-king was carpeted with mats. This evidence further supports the assertion that mat making is an old craft among the various people of Nigeria.

Today, mat weaving is still being practised in Nigeria by different groups of people. For instance, in Southern Zaria in Kaduna State. The Isoko and Ijaw in Delta State, and some other places in the Northern, Eastern and Southern parts of the country.

2.5 DYE

Oguntona (1986), defines dye as organic chemical compounds, which imparts colour to other materials by saturating them in an aqueous solution. Newell (1940), stipulates that, the animal and vegetable world have been the sources of materials for dye stuff for many centuries. He defines dyes stuff as a substance which when in solution is capable of changing the hue and imparting a new and permanent colour to a fibre.

Dyes or colours can be obtained from dye plants that grow all around in fields, on mountain sides, in marshy areas

and deserts. When man first began to put colour into fibres, he found it does not remain, but fades in sunlight and runs when wet. In order to fix the colour to the fibre, various substances have to be added before dyeing. These are called Mordants or Fixatives, (Castino, 1975).

Johnston and Kaufman, (1981) were of the opinion that dyes contain two chemical features, namely, Chromophores and Auxochromes.

Chromophores: These enable the dyes to appear in a particular colour. They are saturated group of atoms which may be considered as areas of electron density that allows light of specfic wavelength to be absorbed by the molecule, thereby creating the appearance of a specific colour.

Auxchromes: They aid in holding the dye to the fibre. Auxochromes in the dye interact with the fibre molecule to form either a temporary or permanent bond. The ability of the auxochromes to aid in attaching the dye to the fibre is directly related to the fastness of the particular dye on the fibre. The bond that is formed could either be physical or chemicmal.

Oguntona (1986), stipulates that the use of dyes in textiles, paints, food, drinks, leather and paper industries has now made the dye manufacturing industry very important. Synthetic dyes have become available in the world market and have almost immediately displaced natural dyes competely. He notes that Synthetic dyes could be classified based on

their effect on different fibres. Generally, they are classified into Vat dyes, Azoic dyes, Reactive and surphur dyes.

* *Acid Dyes*

According to Newell (1940), acid dyes are derived from azo compounds of tolueue and benzeas, both of which come from light-tar-oils. These dyes are said to be salts of colour-acids which are easily soluble in water. Generally, acid dyes do not dye vegetable fibres. They require the presence of some acid which liberates the colour- acid, and thus, allows it to combine with bases which are found in the fibres being dyed. These are animal fibres, such as silk and wool. Individual acid dyes vary considerably in fastness to light. In general, the acid dyes are quite permanent, but acid violets and green, normally are fugitive.

Johnston and Kaufman (1981), state that acid dyes are so named, because of the dye molecule of a sulphurinic-acid-salt of the chemical group. The attraction between the dye and fibre in this class is an electrostatic one between the acid component of the dye and the basic amino group in the fibre. These dyes are available in a wide range of brilliant colours.

There are two different types of acid dyes recorded by them. These are Levelling and Milling. Levelling has smaller molecule that gives a uniform colour, but requires strong acids and have poor washfastness. While Milling,

have larger molecules and can be applied from weak acid baths. This type is recommended for studio surface design.

* *Basic Dyes*

Johnston and Kaufman (1981), affirm that basic dyes are otherwise known as cationic, because of the positive charge of the primary dye chromophore. They have a mutual affinity for wool and silk. Basic dyes have brilliance of colour, but in general, they have poor fastness to light. According to Oguntona (1986), basic dyes, are the "first class" of synthetic dyes introduced in 1956. They have no affinity for cellulosic fibres. They can be used with the help of mordants.

* *Direct Dyes*

Direct dyes were first developed by Bottinger in 1884 as reported by Johnston and Kaufman (1981). The dyes in this class are held to the fibre molecule rather than chemical. This bond could be as strong as those in other dyes, but is more easily disrupted. Although a wide range of colour is available, there is a general lack of brilliance and fastness to light and washing. They are used primarily on cellulosic fibres.

* *Sulphur dyes*

Newell (1940), reports that sulphur dyes are insoluble

in pure water, but, if they are dissovled in an aqueous solution of sodium sulphide and heated, they will dye vegetable fibres especially cotton, in a direct bath. These colours, when used in animal fibres, the resultant hues produced on fabrics are not bright, but appear as dull shades of green, brown, blue, and black. These dyes contain sulphur in the molecules, but their structure is rather indefinite.

* *Vat Dyes*

Newell (1940), also notes that, the term vat dyes is used to designate certain dyestuffs that are themselves insoluble in water, but which can be used in the form of their leuco compounds and then oxidized in the air, thus bringing out the colours. For many years Indigo was the chief Vat dye, but later others, such as, the Ciba series, the Bromindigos, Thioindigo series and brilliant Indigos emerged.

Johnston and Kaufman (1981), are of the opinion that Indigo is one of the oldest Vat dyes known, and was perhaps used as early as 2000 B.C. They stated that Heuman developed a synthetic Indigo , and this led to further developments in the field.

It should be noted that despite the introduction of synthetic dyes into the world market and its wide usage, the ancient practice of vegetable or nature dyeing still thrives. The major reason is that some chemicals

contained in these synthetic dyes are not suitable for most natural fibres. Acids are generally destructive to vegetable materials like palm fronds, straws or grass, which are used for mat production and other similar products, as they cause breakage of such fibres. Synthetic dyes therefore, are most suitable for fabric dyeing and not fibre such as used in mat weaving. Hence, the Hausa weavers use "Galura", which is a vegetable or natural dye.

2.6 VEGETABLE OR NATURE DYEING

According to Clarke, (1939), vegetable dyes are made from seeds, leaves, roots, barks or plants. The ancient practice of vegetable dyeing brought colour into art. The colours are extracted by hard boiling. He lists the following as some dye producing trees and shrubs.

Trees and Shrubs	Part used	Colour or Dyes
Guinea corn	sheath leaves	red pigment
	sheath stalks	black.
Teak	Leaves	red pigment
Camwood	Wood	red dye
Physic Nut	Sapot old tree	black dye.
Mango	Bark	yellow dye
African Rose Wood	bark and root	red dye.

He adds that when the plant is fruiting, the pigment

(i.e. the colouring matter) is strongest. During the following period the colour is weak.

Castino (1974), specifies that some plant-dyes may require the use of mordant. He reports the following dye plants and colours with their different mordants as seen below:

Dye-producing Plants	Mordant	Part used	Colour
Apple	No mordant	twings	yellow
Bayberry	alum	berries	blue
Blackberry	alum	berries	rose to pnik
Butternut (white walnut)	alum	hulls	tan brown
Cherry	alum	twings	yellow to brown
Grape	alum	fruit	red-purple
Pear	no mordant	twings	yellow
Walnut	no mordant	hults	tan, brown
Daylily	alum	flowers	yellow
Privet	alum	Leaves & stems	light green, copper or iron yellow
Carrots	alum	tops	home green yellow
Onions	alum	outer skin	yellow, orange, golden brown.
Spinach	alum	leaves	lime-yellow, green.

Presently, most of these vegetables or dye plants are processed into powdery form and are sold in the market with a local name: "Galura". However, some Hausa traditional mat

weavers still prefer to produce their own dyes from dye-producing plants available to them. Most of the nature dyes used in dyeing materials for the Hausa mat do not require the use of mordants. For instance, the root of Rawaya (Hausa language) plant gives black dye, and it requires no mordant.

2.7. CURTAINS AND BLINDS

According to Wilson (1960), curtains and blinds were most commonly associated with window and that, for the following purposes:

- To prevent glare
- Give privacy from outside viewing
- Obscure unpleasant views
- Regulate the quantity and quality of light entering the room
- Soften the sharp form and tone contrast between window and wall areas and juncture
- Alter the window proportions and by their line, colour, texture and pattern, bring character and a desired atmosphere into the room.

The staff of Connaisance Des Arts (1963), note that door curtains were originally intended to hide badly placed door, which upset the balance of the room. But from the

17th century, door curtains had been used for framing opening, where there was no door. Then very little importance was attached to the decoration of windows. But during the second half of the reign of Lois XIV, curtains suddenly came into vogue. Precise rules to govern their use were quckly devised.

Thornton (1978), reports that, early in the seventeenth century, a curtain that was simply pulled to one side was in vogue and a window has just one single curtain. That when the demand for greater order in interior architecture began to manifest itself, it was recognised that the single window-curtain could distort the symmetry of a scheme of mural decorations. It was therefore thought that if there were two windows, one could pull each single curtain to opposite side. Then the idea of dividing the single curtain down the middle was developed, so that the halves could be drawn to opposite sides of the window opening during daytime. This was introduced, because it was more convenient, and it also makes the window become more decorative.

He further states that, at about this same time a new form of curtains was invented in France. This was the "Pull-up" curtain, which as its name implies, could be pulled up to the window-head by means of cords. Such curtains looked particularly good from inside the room, and looked best if not pull up too tightly against the top of the window.

The ordinary hanging curtains were also thought to require a more decorative finishing at the top. For this reason, Palmets (called 'Valance') were therefore added in 1673. As window curtain became increasingly embraced in the decoration of the room, the tendency was to have them match the rest of the upholstery. If curtains were particularly delicate, very heavy or were somehow awkward to manipulate, one might fix cords to the top. The curtains could be drawn backward and forward by pulling the cords, instead of tugging at the bottom of the hanging.

In the eighteenth century, brass rings were introduced. The rings were sometimes sewn directly to the top edge, or to the back with a gathered leading. They were also attached with hoops of tape, which made the top of the curtain hang well below the rod of iron. They usually had hoops at each end, which fitted down unto hooks and are driven into the wall. During the second half of the century, curtains in luxurious setting were often trimmed with fringe. There were many makers of window blinds in London by 1713; and it was reported that in Sweden, it was customary to whitewash the inside of glass windows to protect the curtains from the sun in summer.

2.8 TYPES OF CURTAINS

There are different types of curtains. Wilson (1960), categorizes curtains as: sheer window curtain, draw curtain, side-drop curtain, vertical-drop curtain over drape. He

explains each of the different kinds of curtains as follows:

i) Sheer Curtains: These are translucent fabrics placed against or close to the glass. They are intended to impede casual observation into the room, while permitting the maximum amount of daylight to enter the room. They also soften and diffuse the light passing though the window. Sheer curtains may be straight hung, freely stretched or looped to the side and tied back. Straight hung curtains should have maximum fullness. The most suitable fabrics for sheer curtains are lace, nets, cotton, rayon, leno weaves, guaze, fibre glass, plain weaves in Terylene.

ii) Draw Curtains: These are usually opaque fabrics and are hung, so that, they maybe drawn across the window to give complete privacy. They are normally hung in front of the casement, and with straight, vertical drape, suspended from rigid horizontal rods or traverse track. The type of suspension depends on the height and weight of the curtain, and on whether the suspension fitment is to be exposed or concealed by a valance or window cornice. Fulness is essential, if draw curtains are not to look skimped. Twice the window width is average, but heavier materials may suffice with one and a half times the window width. Textiles suitable for draw curtains are broadcloth, brocades, canvas, brooatelle, novelty weave, tapestry, satin, velvet, velveteens, twill, sateen and crash.

iii) Side-Drop Curtains: These serve the same purpose as draw curtains, but drop across the windows. They are hung in pairs, each curtain being looped and fastened back when not in use. They are suitable for tall, narrow and arch-headed windows. A fairly heavy fabric is needed, one which will also give a good vertical drape when dropped across the window. The top of each curtain is permanently fixed across the window head, and if not concealed, should have some form of pleat heading. Silk-textured or lustre fabrics are most effective.

iv) Vertical-Drop Curtains: These have a luxurious appearance, give privacy and are suitable for use with wide full-height windows. Medium weight, lustrous fabrics are recommended. The top edge of the curtain is permanently fixed, the bottom edge is attached to cords, so that it may be raised or lowered at will. At least twice the drop length and width of the window is required to give appropriate fulness. Weight are placed at the bottom end of each tape or in the form of light metal chain across the hem of each bottom swag.

v) Overdrapes: Overdrapes are mainly intended for decorative purposes, but may be used for obscuring the window. They are normally narrow, vertical or looped-back drapes on either side of the window. In both cases, plenty

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of fullness is desirable. These drapes are inevitably taken to the floor. Where luxurious material is used, a desirable effect will be achieved by allowing it to fall in folds on the floor. Rich silk or lustre-finished materials are suitable.

Valane or Pelment:

This is the name given to pieces of drapery arranged at the head of the window. They are decorative coverings to the tops of curtains, and the way in which they are suspended. They may also serve to modify the proportions of windows, its accent and drapery style. The fabrics are normally arranged as swage and accompanied by fringes. The fabric may be in contrast to the colour of the other drapes, but desirably of a richer appearance.

2.9 USE OF MAT AS CURTAIN OR BLINDS

Mat is generally used for a variety of purposes, such as, bedding, floor covering, fencing, seating materials as well as curtain or blinds.

Wulff (1966), records that, mat weaving was still an important craft in Persia, for window and door blinds. Thornton (1978), reports mats of different kinds that were used or fitted into window embrasure as curtains, especially during winter for protection against the cold in England, Holland and France.

Wilson (1960), states that apart from the use of mat, other materials such as strips of wood, finely split bamboo

or cane plaited with strong cotton or other fibre threads could be used conveniently for blinds.

CHAPTER III

RESEARCH METHODOLOGY

3.0 PRODUCT DEVELOPMENT RESEARCH

The researcher has found this present study a product development research. In reference to Adetoro (1986), a research that tends to change products or create new ones is known as a product development research.

For the purpose of a thorough study, the research methodology employed for this study includes: population, sampling, research instrument, pilot study data collection and sample experimentation.

3.1 POPULATION

Adetoro (1986), records that, in order for a researcher to collect information needed, he must identify the entire group that contains the information source. This group is the population. The groups that constitute the population for this study are the mat weavers and dealers in the raw materials (palm leaves) in Kaduna metropolis.

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3.2 SAMPLING

The random sampling method was employed in the selection of weavers in the National Museum and Kawo. Dealers in Kawo market were selected as representatives of palm fronds sellers.

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3.3 RESEARCH INSTRUMENT

The research instrument that was utilized for the data collection was oral interview with the help of an interpreter, while the researcher was a participant observer. It was observed that almost all the Hausa traditional mat weavers and dealers in the raw materials could not communicate in English. The use of a Hausa interpreter became imperative, if any information is to be gotten from them, as the researcher could not speak the Hausa language.

3.4 FIELD WORK

As earlier mentioned, within the Kaduna metropolis, there are different places where palm frond-mat weaving is being practised and the raw materials sold. The already specified sites were visited and adequate information about how to obtain and process the palm fronds were gathered from the weaver and sellers.

3.5 PROCEDURE FOR DATA COLLECTION

At the National Museum, where there was a head weaver , his consent had to be obtained before the interviews could be conducted. Sellers of the raw materials and weavers in Kawo were approached individually and they co-operated.

All the questions asked were written in English. The interpreter, then translated them into Hausa. During the practical session in mat production, the researcher learnt

the process by watching how they are carried out and taking detailed notes.

3.6 TREATMENT OF DATA

After the data had been collected, the researcher carried out some practicals, based on the information already obtained. The practical procedure for data treatment was divided into the following four phases:

Phase One

i) -Obtaining the raw materials.

ii) -Processing of raw materials, practising of dyeing and weaving techniques to master the skills.

Phase Two

This involves practical activities or experimentations to ascertain:

- The possibility of drafting the mat designs on papers before weaving.
- Using tie-and-dye technique to dye some of the palm leaves in order to obtain different colours on the same leaf or strand. This is to be used to create some contemporary effects and designs on the mat.

Phase Three

- Drafting of paper designs on paper.
- Sample weaving of the drafted designs

- Sample weaving of undrafted designs with the resist dyed palm fronds to create some artistic innovations or designs.
- Selection and the usuage of the best woven design as a model for the production of the window blinds.

Phase Four

This involves the construction of the window blinds in the following sequence:

- weaving the selected design into a long continous strip.
- cutting the woven mat into shorter strips of the desired size for the blinds.

iii) - Construction of a face board on which the strips would be suspended or hung.

6.1 MATERIALS USED FOR MAKING THE MAT

All the materials employed for the mat making are obtained locally. They are:

i) Leaves of a certain palm tree, called Deleb palm tree and otherwise known as 'Kanjinjiri' in Hausa.

ii) Local dyes, called 'Galura' in Hausa.

iii) Knife for splitting or slicing the leaves and

iv) Aluminium pot or bucket for boiling or dyeing the palm fronds.

SOURCES OF THE DELEB PALM LEAVES AND THE LOCAL DYES OR "GALURA"

During the oral interview with some of the dealers of the palm leaves at Kawo market, the researcher was told that there are people whose occupation is to cut these leaves in the places where they grow. They dry the leaves before selling them in bundles to retailers. The weavers buy from the retailers in smaller bundles in their local markets such as exist in Kawo, Kaduna. They also explained that the Deleb palm trees are not usually cultivated, but grow wild near rivers, streams or valleys. Only the fresh leaves are extracted from the tree. These leaves are of two types. One is greenish, which is usually stronger in nature. While the other is creamy in colour. The latter is said to be the newly sprang-up leaves of the palm tree, and it is better and more useful than the greenish one because it is much more pliable

The "Galura" or local dye stuff are vegetable dyes. They are normally sold in the markets within Kaduna metropolis in powdered form, either in satchets or small packets. Some weavers at the National Museum, informed the

researcher of roots and leaves of certain plants and shrubs that can be used as dye sources, apart from the already processed dye stuff sold in markets. Specifically, they mentioned the root of a certain plant called "RAYAN",from which yellow-coloured dyes could be obtained. The root, which are uprooted from the soil have to be dried for some days. They are latter crushed or beaten in a mortar with a pestle. The crushed roots are then heated on the fire with water for about twenty minutes and allowed to cool. The root or plant solution is later filtered with the use of a cloth to remove the coloured solution. The liquid solution collected is the colour or the final product. It is constantly stirred with a stick for the required hue of the colour to come out.

The researcher bought the Deleb leaves and dyes from Kawo market where they are being sold.

3.6.2 PROCESSING OF THE DELEB PALM LEAVES:

According to Seagroath (1975), leaves are classified as vegetable or cellulosic fibres when they are considered as textile materials. In this research the leaves of the Deleb Palm are so considered. To make these leaves suitable for use, some treatment had to be administered on them.
The procesing of the leaves can be classified into three stages.

i) Drying stage;

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ii) Slicing stage and

iii) Dyeing stage.

Drying Stage:

This is the first stage during which the leaves are dried in the sun. According to one of the sellers of the Deleb palm leaves, the drying takes three to four days during the dry season. He added that, if the leaves are not properly dried, they may repel or fail to properly absorb the dye .

Slicing Stage:

At this second stage, the dried leaves are assembled and their mid-ribs are removed with a tiny-pointed knife. Each leaf is then sliced lengthwise while holding it in the left hand. The knife is inserted at the middle of the leaf and is made to run upwards to the tip of the leaf. The pairs of strands are opened out and the base is then cut off.

The number of strands gotten from each dried leaf and their width depends on the width of each leaf and the dimension required by the weaver. The width vary from 0.5cm to 1.3cm. Any leaf whose width is less than 0.5 cm should be avoided for mat weaving. In order to save time, most of the traditional weavers make use of large strands as it makes the weaving fast. They could split a leaf of 1.3cm (mid-rib inclusive)into two. As the mid-ribs are usually

approxiately 0.1cm or 1mm, each of the strand may be about 0.6 cm wide. However, the smaller the strands, the more beautiful the mat looks.

The researcher did ensure that the leaves used for the mat were sliced into strands of smaller dimensions than those of the traditional weavers,in order to ensure a high aesthetic quality of the weave. She therefore chose the 0.3 cm width of strand as her standard measurement.

During the slicing process, the researcher used a big sewing needle for splitting, and a pair of scissors for cutting off the base. She discovered that these tools were more convenient to handle and faster than the knife which is traditionally used.

Dyeing Stage

The basic materials needed for dyeing the palm fronds are :

i The local dyestuff or "Galura"

ii) Aluminium pot or bucket

iii) Firewood or stove

iv) Water

v) Stirring stick.

The dyeing of the leaves is by boiling them in dye solution. The procedure begins by separating and tieing the leaves into bundles for various colours in which they would be dyed. The tying is done towards the apex with rafia to hold the leaves together and for easy handling.

After litting the fire, sufficient quantity of water in a pot is then put on it. It must be ensured that the water would be enough to completely submerge the leaves to be dyed. By the time the water gets warm, some quantity of dye is poured into it and stirring is done immediately with the aid of a stick to prevent the dye from settling at the bottom of the pot. The dye solution is allowed to boil for about two to three minutes. The leaves are then immersed in it, leaving the tied peak extending out of the solution for easy turning and removal of the material from the dye solution. The leaves are constantly turned to make for even penetration of the dye into everyone of them. More dyes could be added to the solution, if the initial quantity is found to be inadequate.

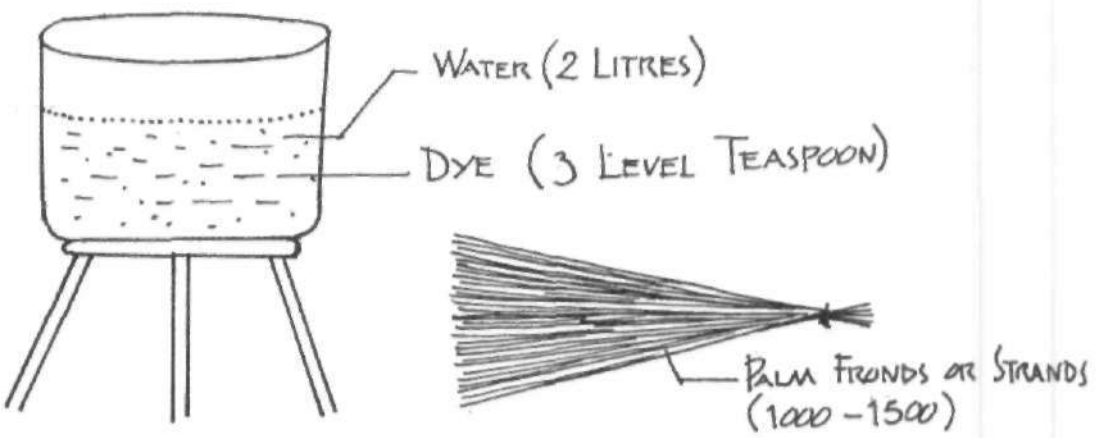


Fig.1 Approx. ratio of water to strands in dyeing palm fronds

For a beginner who wishes to dye about 1000 - 1500 strands, about two litres of water and three level tea spoons of dye is recommended. This ensures that neither too

much water or dye is used and so the required concentration is obtained.

By the time the materials boil for twenty to twenty-five minutes. They would have almost completely absorbed all the dye. They are then removed from the pot by holding the tied tip. The dyed palm fronds are finally spread in a shade to dry gradually. The gradual drying makes the dye to retain its original colour and intensity.

It was noticed during the dyeing process that the strands expanded to about twice their width, after boiling, but they later shrank back to their normal size after drying.

Dyeing By Tie-and-Dye Technique:

Tie-and dye effect is one of the means which the researcher choose to create some contemporary designs or make some innovations. Tie-and Dye technique could be defined as a resist method devised to design the surface of a fabric. It is achieved by sewing or tying some areas of a material with a rope or thread to prevent the dye from penetrating through the tied areas.

The first and second trials of the tie-and dye technique on the palm fronds, through the normal immersion of the strands into the dye solutions, proved unsuccessful as the dye penetrated into the tied areas.

A third attempt gave a very positive result. It was carried out by:

Firstly, soaking the leaves in water to get them soften. This enables the strands to be properly tied.

Secondly, the water-soaked leaves are placed on a slanted board so as to drain them of the water.

Thirdly, while they were still damp, the areas to be resisted were tied with a raffia rope. Two other longer ropes are tied loosely to both ends of the bundle and their ends were knotted together to suspend it. This was to effectively control the dyeing of the leaves. However, it was ensured that the ropes were long enough to avoid the steam hurting the hand. The dyeing was done by dipping in and lifting the materials at regular intervals in the dye solution.

In multiple colour dyeing, the process is begun with the application of the lightest colour. For instance in the two colour dyeing, the first colour was achieved using the the normal boiling method or by immersing the leaves in the dye solution. As already stated, the proposed resisted areas had been tied while the strands were still damp. The second dyeing was then done with the normal tie-and dye method of dipping and lifting out the leaves at regular intervals in the dye solution as already described. The dyed materials were finally dried gradually before they were used. Fig. 2 & 3 show the one colour and the multicoloured dyed palm fronds respectively.



Fig.2 Single colour dyed palm fronds



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Fig.3 Multicoloured dyed palm fronds

MAT WEAVING TECHNIQUE

Mat weaving is another technique of weaving that involves the use of the fingers as tools. The technique is

created by interlacing two pairs of strands over and under diagonally. As the strands are locked, the normal weaving assumes it shape.

For a beginner, the mat weaving process is a bit diffcult. It therefore requires careful and constant practise to master the technique. Undyed palm leaves are mormally used in starting the weaving to avoid wasting the dyed strands that will later be used for the design. A number of the leaves are split into three pairs each. To hold all the strands firmly together when beginning the weaving, the base of each one of them is not cut.

For the purpose of easy understanding, the mat weaving technique can be explained in stages as follows:

Stage 1- Two by Two Interlacing

This takes the following order.

1) With an undyed sliced leaf in each hand, the left hand leaf is placed diagonally towards the bottom-most part of the right hand leaf to form an "X" shape.

ii) It must be ensured that the two thumbs are placed where the leaves are crossing each other, with the first finger supporting the leaves at the same point underneath.

iii) With the left thumb on the left leaf,the first pair of strands are turned upwards left-wise.

iv) The first finger of the right hand is again used to turn the first two pairs of strands on it upward. At the same time the left thumb presses down the second pair of the left hand strands.

v) Lastly, the third pair of the right hand leaf is turned upward over the third pair of the left hand leaf with the right hand first finger.

This ends the interlacing of the two leaves, and subsequent ones are woven in the same manner. The first finger and the thumb are the most functionable tools in this weaving, while the others support them in the process. One who learns how to use them effectively will have little or no problem in manipulating the strands.

Stage 2- The Width of the Mat strip

i) Two interlaced leaves in stage one are placed diagonally one over the other.

ii) Then the under-over interlacing of the two pairs of strands is done consecutively as described in stage one.

iii) By adding more of the leaves in stage one and weaving them together one after the other, a woven row is formed. One can stop to adding more of the leaves as soon as the width of the proposed mat strip is getting beyond what the palm can effectively handle.

At the end of this stage, two groups of leaves would be seen, with one set upwards and the other down-wards like a

shedded or opened sets of warp yearn on a loom.

A beginner always faces some structural problems as the joining of the leaves is found to be difficult to achieved. Some times, the weaving would refuse to assume its expected or normal shape as the woven row spreads out as if it would get loosen. The weaver may become so frustrated and might decide to loosen the whole weave to start afresh. The researcher as a beginner, experienced these structural problems. However, they were later overcome through constant practice. This gave confidence in the handling of the materials and a recognition of the potentials inherent in the technique.

Stage 3-Weaving of the Main Body of the Mat

i) The weaving of the body of the mat starts from the right hand by forming the selvedge. The selvedge is created by be bending one of the strands of the first pair backward, then passing it behind the next two pairs and bringing it out inbetween the second and third pairs to join the front strand.

ii) The normal under-over weaving of the two pairs consecutively continues and the body of the mat takes its shape.

Stage 4 - Replacement of Strands and Introduction of Colours

Replacement of strands is done for continuity of the weaving and formation of design. The strands are replaced one after the other on both sides of the mat strip at about

three centimetres away from the selvedge. This position could be determined by counting six or seven strands from the edge of the strip. The new strand could be a coloured or dyed one as in the case of design formation.

i) The new or coloured strands is introduced by bending the front strand of the sixth or seven pair into the body of the mat, and inserting the new strand to complete the pair.

ii) The weaving is then continued to the end of the strip and the selvedge is formed in order to begin another row.

iii) To fix a woven row tightly into position, the weaver stops the weaving action, after forming the selvedge and pulls the two sets or group of strands tightly with the two hands. This can be liken to the beating given to the weft yarn when weaving on a loom.

3.7 DESIGNING OR PATTERN FORMATION:

Oguntona (1986), defines design to generally mean plan, order, organisation, structure to enhance effective operation. The Hausa traditional mat design is mainly characterized by ziz-zag lines with the use of red, yellow, green and purple colours.

It was realised during the field work that most of the local weavers are reluctant to embrace the idea of design innovation or development. One of them who was asked why there had never been changes in their colour scheme and

design, replied that the patterns and colours of their mats were passed unto them by their parents. And added deviating from their laid down practice would be changing what their culture is identified with. A suggestion to mix some dyes together to obtain a different colour almost made one of the weavers not teach the researcher the dyeing technique.

The local weavers are reluctant to teach other people about their designs. They feel that they would be giving out the secret of their occupation and may be endangering the source of their livelihood. As a result of this, most of the weavers advised the researcher to try to master the weaving technique and learn how to create her personal designs.

Faced with this challenge, the researcher through intensive exploration of the technique, discovered some other effective designs. With her knowledge of design, she was able to manipulate colours to obtain some exciting patterns. She later noticed that, using a number of strands of the same colour, gives solidly woven areas.

Pre-planned drawing as reference for weaving a design is one of the means intended to achieve the objectives of this study. Difficulty encountered in not understanding the diagonal movement of each strand in a weave made the researcher to initially consider the use of pre-planned drawings to be near impossible. However, after familiarization with the technique,she overcame the initial difficulty and then set out to develop ideas and carry out

some experimentation.

Drafting designs on paper eventually became possible through a careful study of a small woven mat strip. The first observation revealed imaginary vertical and horizontal lines all over the whole woven unit. This was followed by the strands producing a kind of twill weave or diagonal lines in the squares. Finally all the strands were seen to be forming diagonal herring-bone pattern. These various observations were then drawn on paper one after the other as shown in figures 4, 5 and 6.

The application of knowledge gained by the studying of the weave pattern development made the use of pre-planned drawings possible. By being sensitive to colours and patterns and considering their potentials at each point of the design development, the researcher discovered that the possible number of designs that could be produced is only limited by her imagination or creative ability. Consequently, in making pre-planned drawing, she expanded her thinking to include the development of innovative or contemporary designs which could be used for her proposed window blinds.

3 .7.1 DRAFTING OF THE DESIGNS ON PAPER

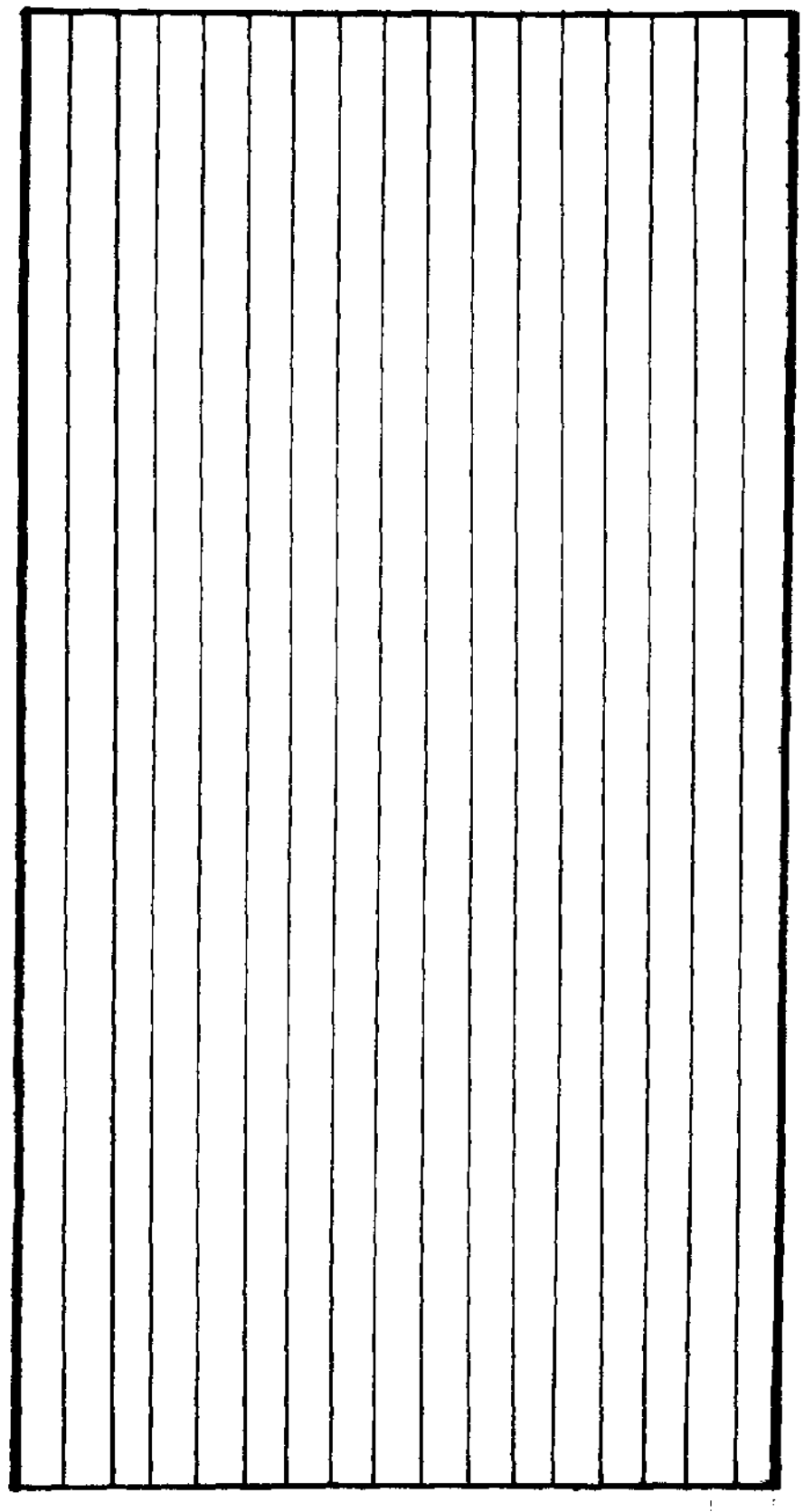


Fig. 4: Vertical Lines

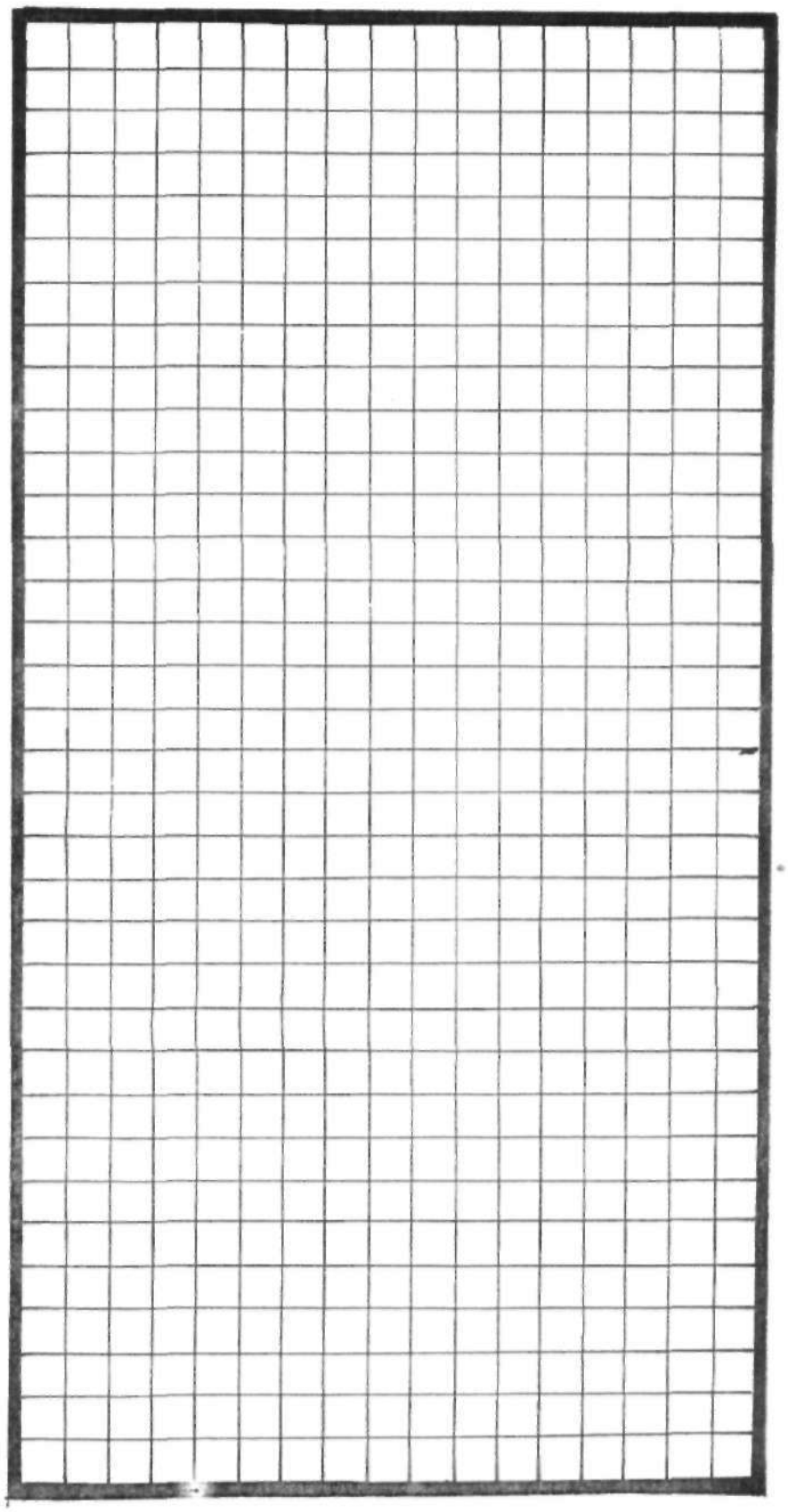


Fig 5: Vertical and horizontal lines (squares)

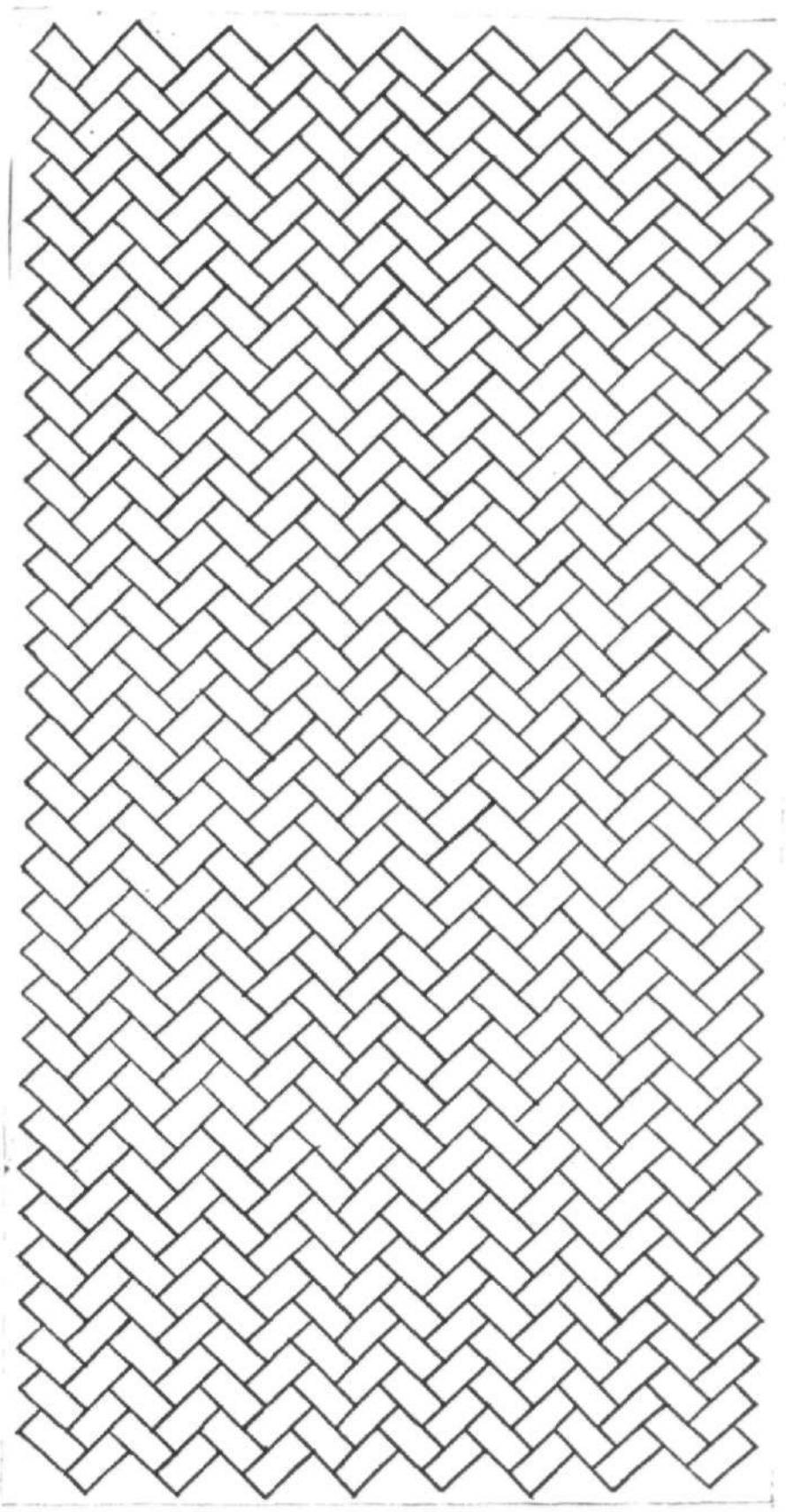


Fig.6: Diagonal Herring-Bone Pattern

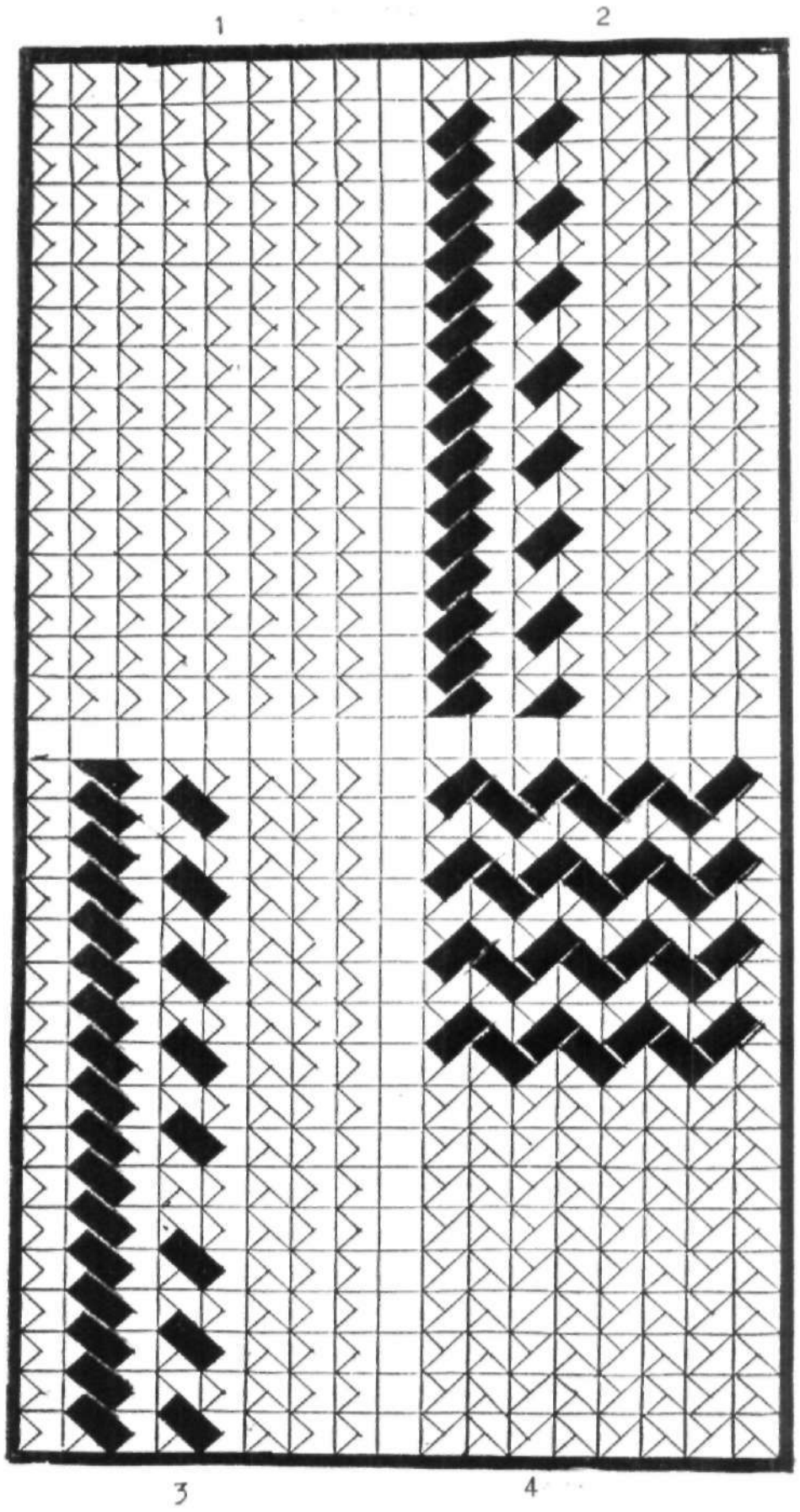


Fig. (6a): Developmental Stages Of Mat Pattern Formation

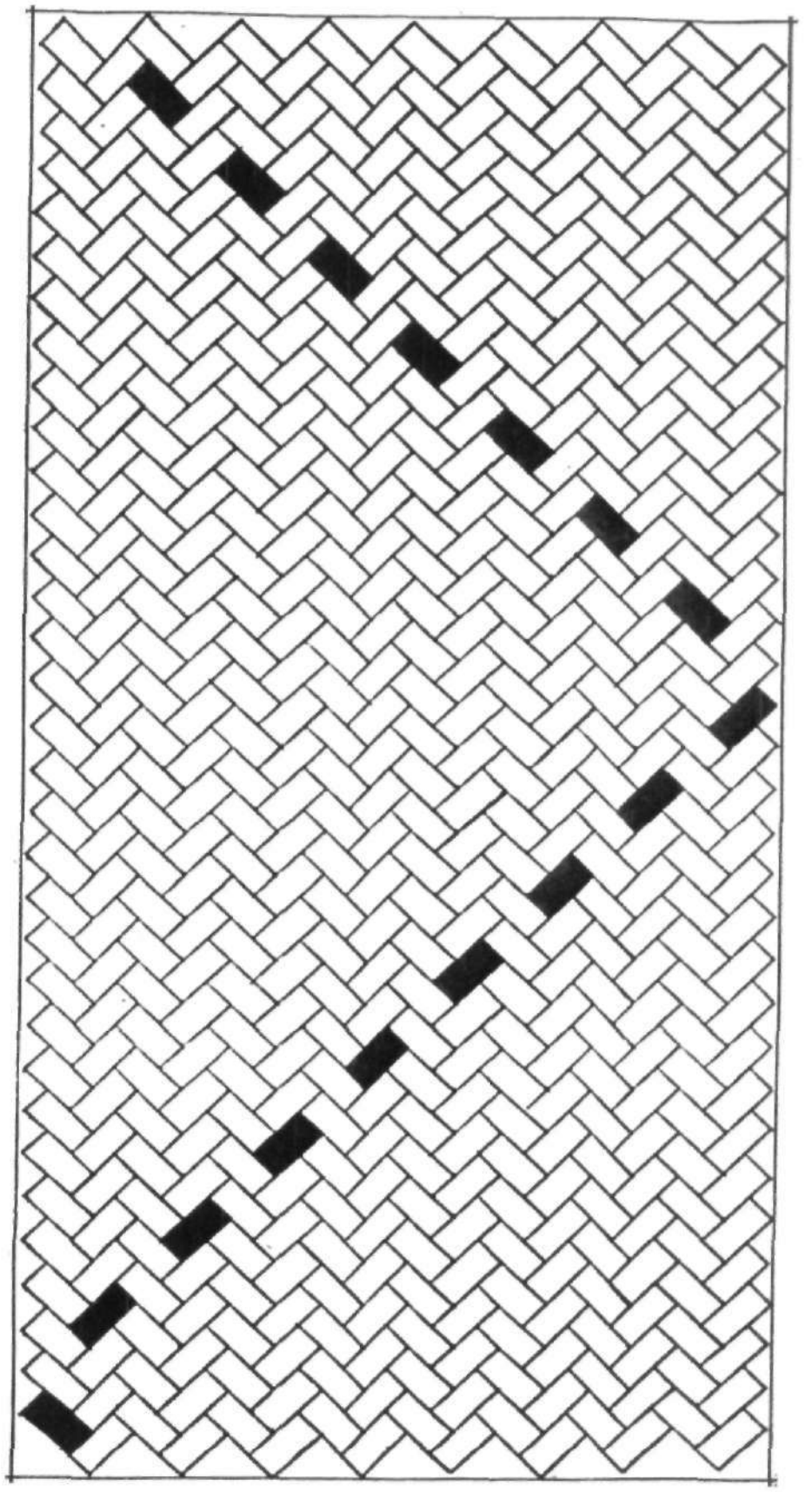


Fig.(6b): Diagonal Movement of each strand during Weaving Process

3.8 Design samples without drafted patterns

Title: CHEST RIBS:

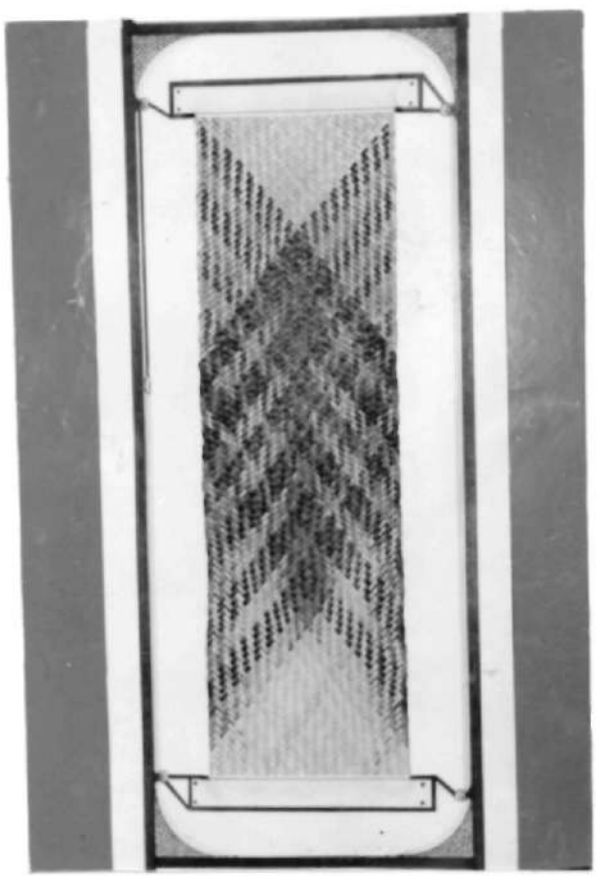


Fig. 7. "CHEST RIBS".

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This design represents the "Chest Ribs". Longman Dictionary of Contemporary English, defines the chest as the upper front of the body enclosing the heart and lungs; while the ribs is described as the twelve pairs of bones running round the chest of a man or animal from the backbone to where they join at the front. The researcher got her source of inspiration of this design from a look at the graphic

representation of the respiratory and circulatory system of man. However, only six pairs of ribs are represented in this design.

The ribs are presented in narrow lines that are formed by a combination of blended cream and red colours. each side of the design is made up of six ribs with a wide green line interspacing them like a rib-case. The ribs project from both edges of the design and move upwards in a slanty form and finally disappear into the red colour in the centre. The first three ribs on both sides of the design appear less prominent. This was done intentionally to represent the distance of those ribs from the heart as studies on man's respiratory system showed.

The red colour running vertically through the centre of the design depicts the flow of blood and the position of the heart in the chest. Patches of red seen in other parts of the design represent blood circulation. The green colour is used to illustrate the freshness of the normal chest. The cream colour on both ends of the design is employed to create a contrast and provide a background for the chest.

This pattern was achieved by weaving six pairs of the blended cream and red colour alternatively with six pairs of the green colour. The blended cream was obtained through tie-and dye technique.

Title BASKET STRIPS:

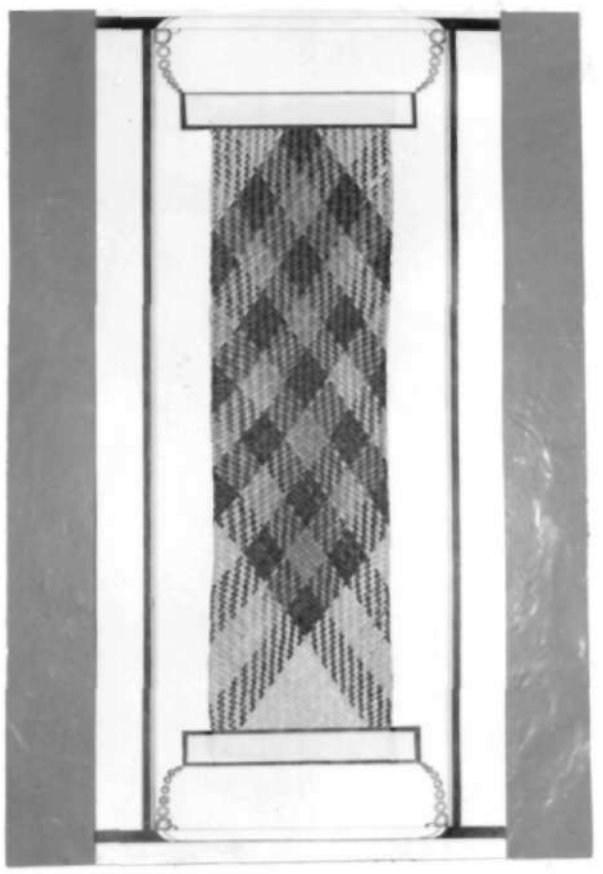


Fig.8: "BASKET STRIPS"

This design represents the strips of a certain plastic basket used by women for shopping. The strips are flat in nature and are woven to form a check-like pattern on the basket.

The flats strips have been represented in this design in three colours. These are purple, yellowish purple and yellow. The purple colour represents one single strip, while the yellow and yellowish purple represent another strip. The yellowish purple was achieved by immersing one half of the yellow strands in the purple dye. All the

strips can be seen projecting from both edges of the design up to the centre.

There are a total of eighteen strips in the whole unit, with nine on each side. Out of the nine strips, five are purple having four of yellow colour interspacing them. The pure yellow colour was employed to create the flat effect of the basket strip. The check-like pattern which is being formed by the purple and yellowish purple illustrates one of the features of the basket.

This design was formed by weaving nine pairs of each of the colours (strips) on both sides of the design consecutively.

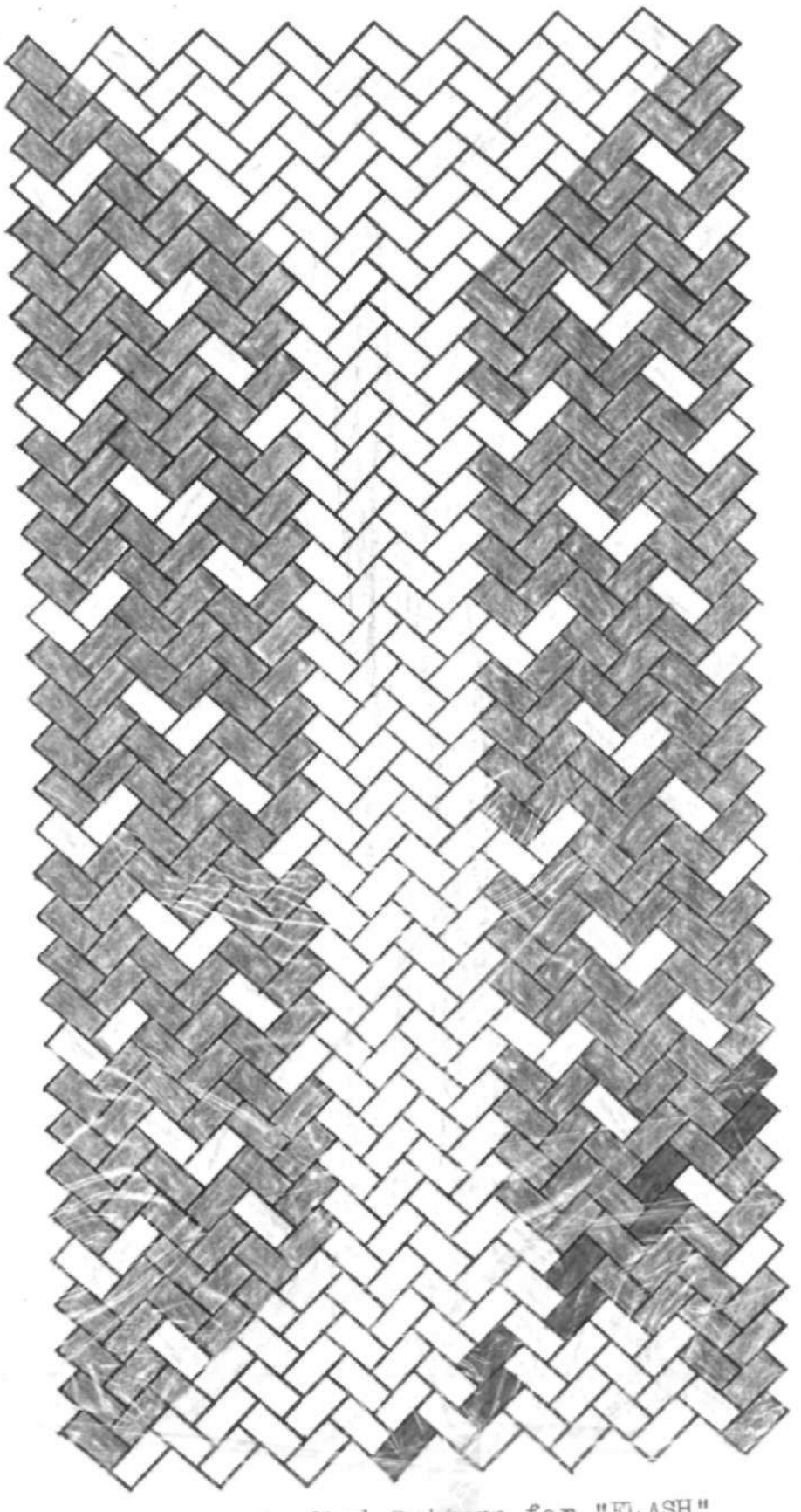


Fig. 9: A Drafted Pattern for "FLASH"

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3.9 DESIGN SAMPLES WITH DRAFTED PATTERNS

Title: **"FLASH"**

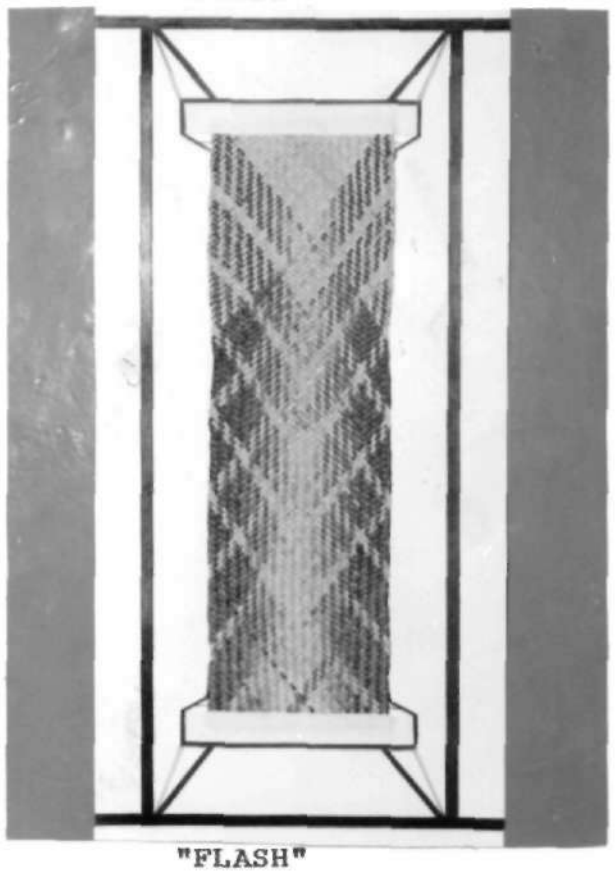


Fig. 10 **"FLASH"**

This design represents a sudden quick bright light from two opposite cars. The cream colour running vertically through the centre of the design represents the full light from the two cars. Other tiny cream colour lines crossing one another are the rays of light radiating into the environment. The green colour represents the environment, the narrow red line at the centre below, projecting from the left side upward towards the right is a signal light, depicting danger.

This pattern was created by weaving three pairs of the cream colour and ten pairs of the green colour consecutively on both sides of the design. The creamy colour running vertically at the centre of the design was achieved by resisting the centre of the strands during the dyeing.



Fig 11 : A Drafted Pattern ^or "RUGGED ROAD"

Title. **RUGGED ROAD**

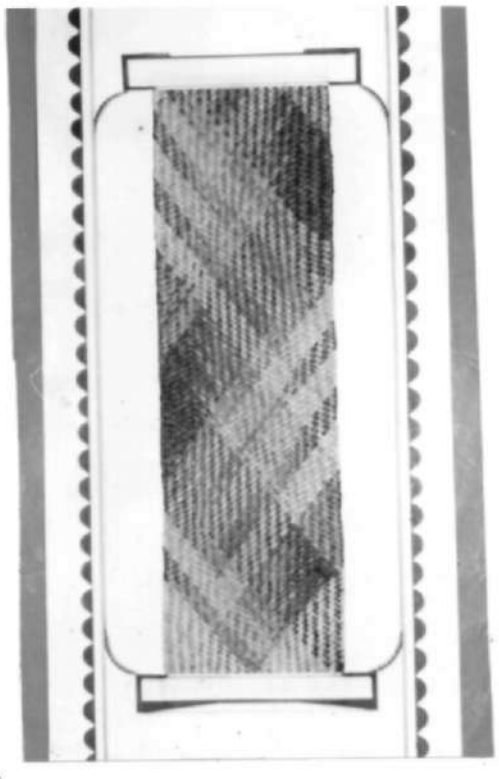


Fig. 12 **"RUGGED ROAD"**

This design represents a "Rugged Road". The work is made up of three colours —black, brown and dark yellow. The predominant zig-zag line in black, running from one end of the design to the other, with some shades of brown and dark yellow lines across its middle is the rugged road. The black colour and zig-zag nature of the design were used to imply that the road is dangerous. The pure black edges of the road depicts the sharpness of the curved areas. The narrow lines in dark yellow represent the wind, while the shades of brown colour represent dirt and dust that is blown all over the road by the wind.

This pattern was achieved by weaving six pairs of the brown and six of dark yellow simultaneously on one side of the design, while nineteen pairs of black on the other side. These same colours were repeated on the opposite side of the design.

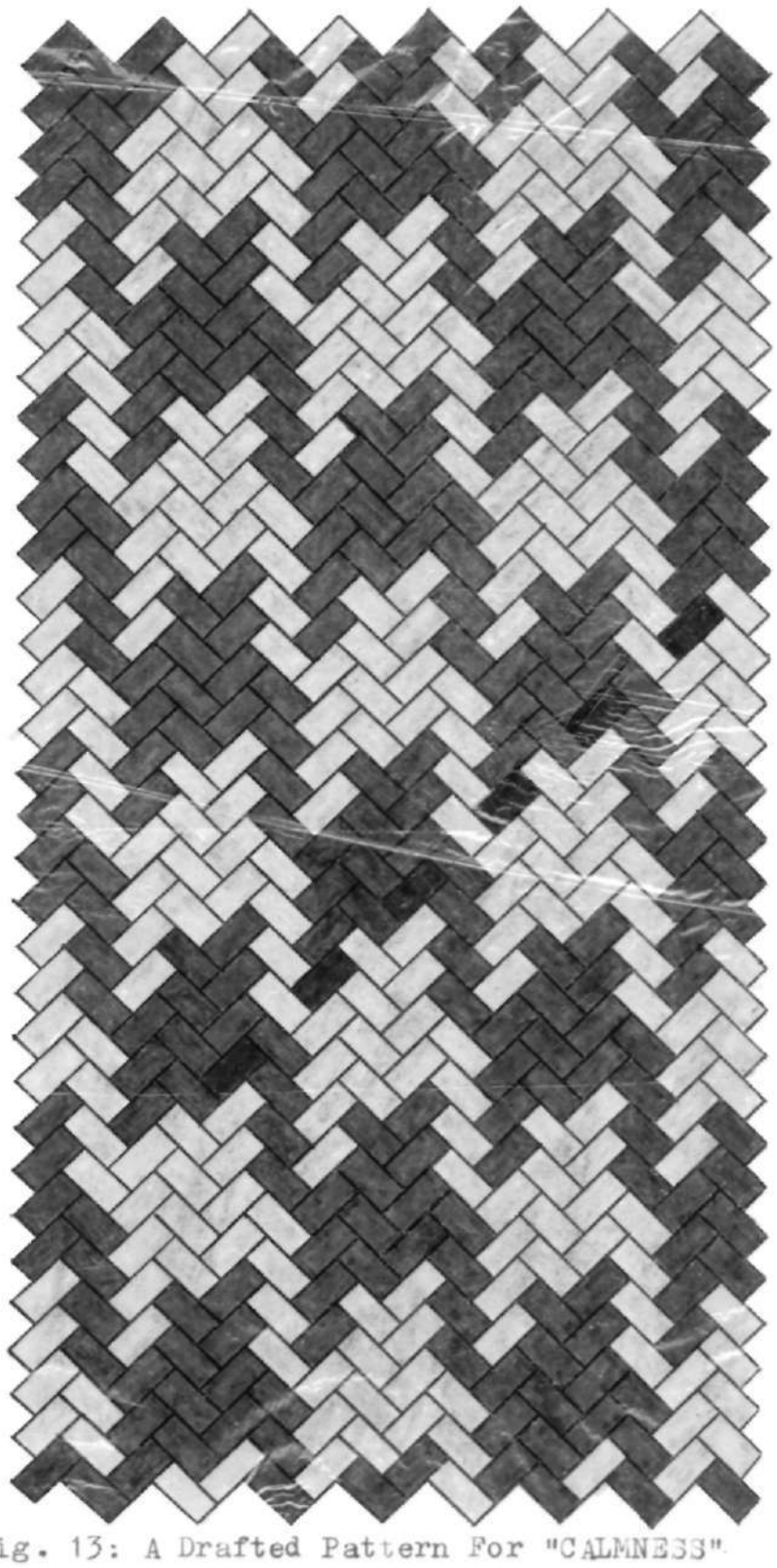


Fig. 13: A Drafted Pattern For "CALMNESS"

Title: **CALMNESS**

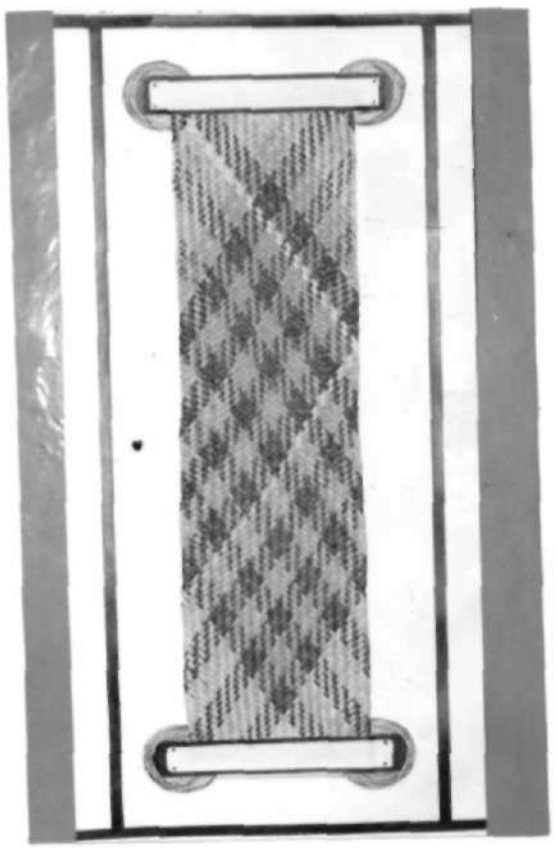


Fig.14 **"CALMNESS"**

The main aim of this design was to illustrate a state of quietness, harmony or calmness that can be created when complementary colours are prudently used together. Complementary colours are colours opposite each other on the colour wheel. Practically, when complementary colours are used in equal strength or intensity, they produce the effect of crudity or rawness.

According to Lilian and Henry (1960), in order to prevent crudity of complmentary colours one should be in

grey tint, with the other dominant. Oguntona (1986), states that, the best way to reduce colour intensity, to subdue or grey down a colour is to add a touch of its complement. Purple and yellow are the two complementary colours used in this design. To create a state of harmony or calmness between these two colours, the advice stated above were considered. Thus, by adding a very little touch of the purple colour to the yellow during the dyeing, calmness was achieved after weaving the design.

The small diamond pattern was created by weaving six pairs of each colour one after the other.

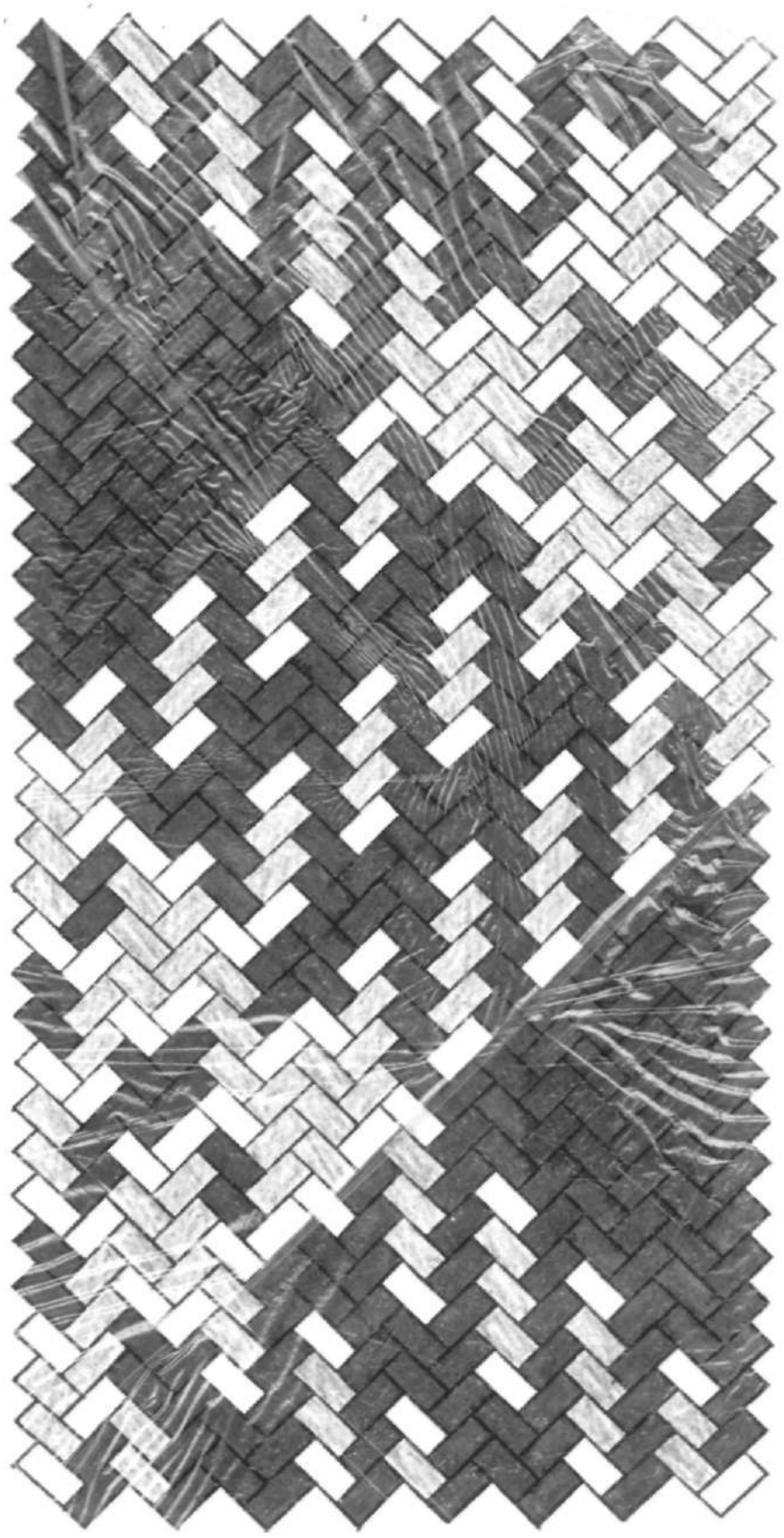


Fig. 55 : A Drafted Pattern For "FOLDED PAPER"

Title **FOLDED PAPER**

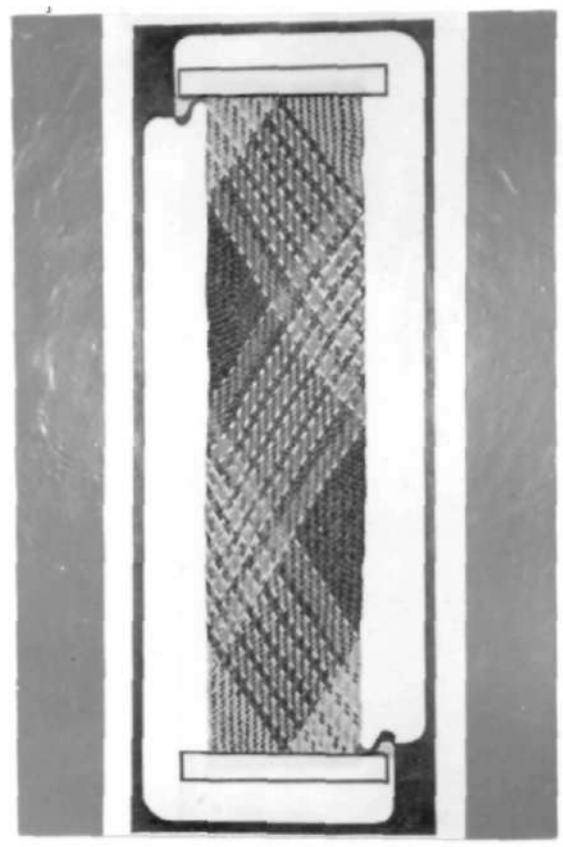


Fig.16. **"FOLDED PAPER"**

This design represents a "Folded Paper". The paper is folded both at its top and bottom. The folding on top is done towards the left, passing underneath the paper, while the one at the bottom is towards the right, passing over the paper.

The whole unit is made up of three colours. They are deep violet, light violet and cream colour. The light violet and cream colour represent the folded paper. The deep violet appearing on both sides of the paper as triangles is used as a background for the paper. At the

points where the paper is folded, the cream colour doubled its concentration in form of a "V-shape", instead of appearing in single broken lines as it is seen in other parts of the design.

This pattern was achieved by weaving twelve pairs of the deep violet colour on the one side of the design to form the background; while three pairs of the light violet, a pair of cream and three pairs of the deep violet colours were woven consecutively on the other side to create the folded paper.

3.10 PRODUCTION AND OPERATIONAL MECHANISM OF THE WINDOW-BLINDS

The design titled, "Folded paper" was selected as the best experimental woven sample for the window-blinds due to the following reasons:

i). Boldness of the design

ii). Good distribution of colour

iii) Simplicity of the design

iv) Contrast between the folded paper and the background.

v) Rhythmic movement of the broken creamy lines, giving the work a sense of continuity.

All these qualities made the design look contemporary and fit for the proposed window-blinds.

Using the sample earlier woven as a model, a long continuous mat strip of seven metres (700cm) in length and nine centimetres (9cm) in width was woven. It was later cut into seven strips of one metre (100cm) each. A piece of cloth was then sewn to both ends of each of the strips to keep them tidy and also prevent them from loosening. Two eye-lids were attached to each side of the cloth. The eye-lids are used to hang the strips unto the board and also to fix the ropes that were used to connect all the strips together along the rail.

Three pieces of plywood were used to construct a face board on which the strips would be hung. Two of them were

designed to have small cut curved shape. These two pieces of wood were nailed together horizontally with the plain piece coming in between them to form a box-like structure. The board behind was being placed higher above the one in front.

In order to hang the strips in the box, two perforated metals were nailed behind to both ends of the front board from behind. Wires were then connected from each hole of the metal to the other. With the help of rings, each of the mat strips was hung to the wires to enable the strips move freely on the wire rail. Lastly, all the strips were connected together with two long ropes which passed through the holes of the eye-lids from one side to the other, and also through the perforated metals. These ropes are used to operate the blinds.

When the left rope is pulled downwards, all the strips spread out one after the other. The strips are parked together behind the front strip, which has been fixed permanently to the wire, when the right rope is pulled downwards.

To make the work presentable, the face-board was painted with white oil paint. A small iron rod was fixed into the attached cloth of each strip with the aid of the eye-lids in order to keep the strip properly hung. Photographs of the constructed window blinds in figures 17, 18, 19 and 20.



Fig. 17 Spreading out the Blind Strips

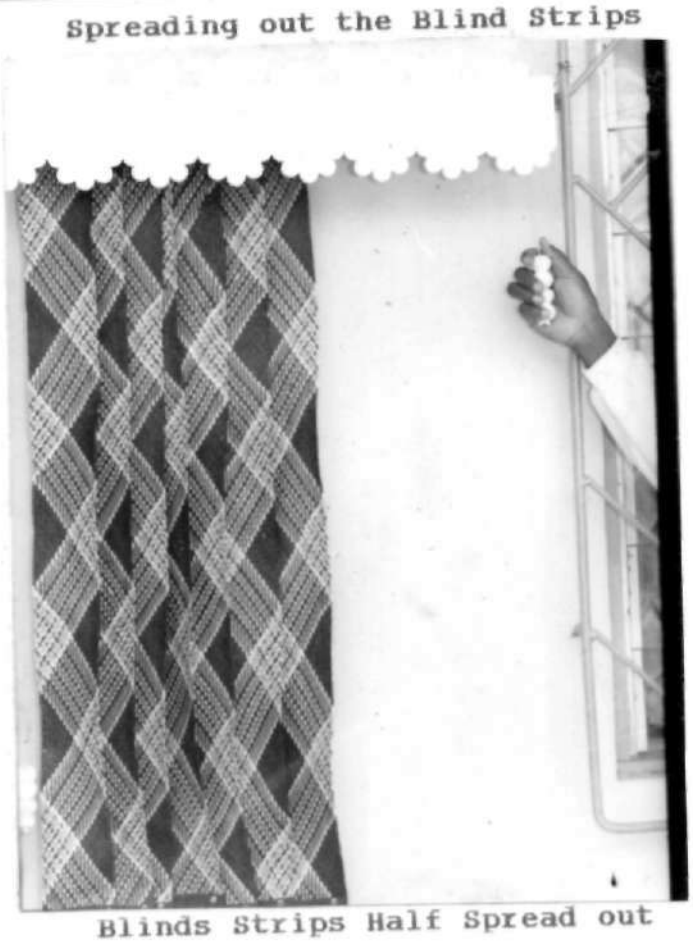


Fig. 18 Blinds Strips Half Spread out

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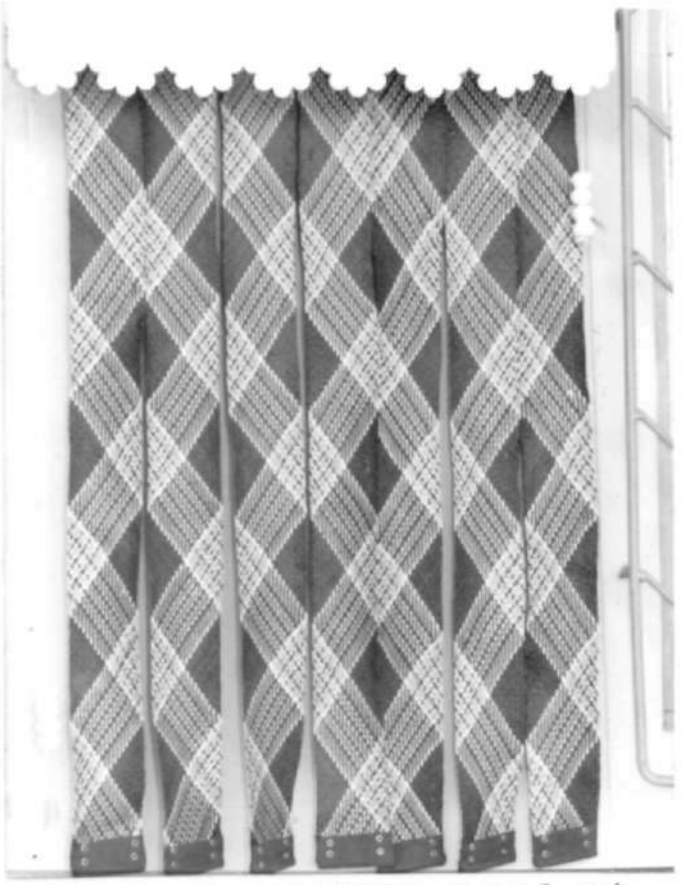


Fig. 19 Blinds Strips Fully Spread out

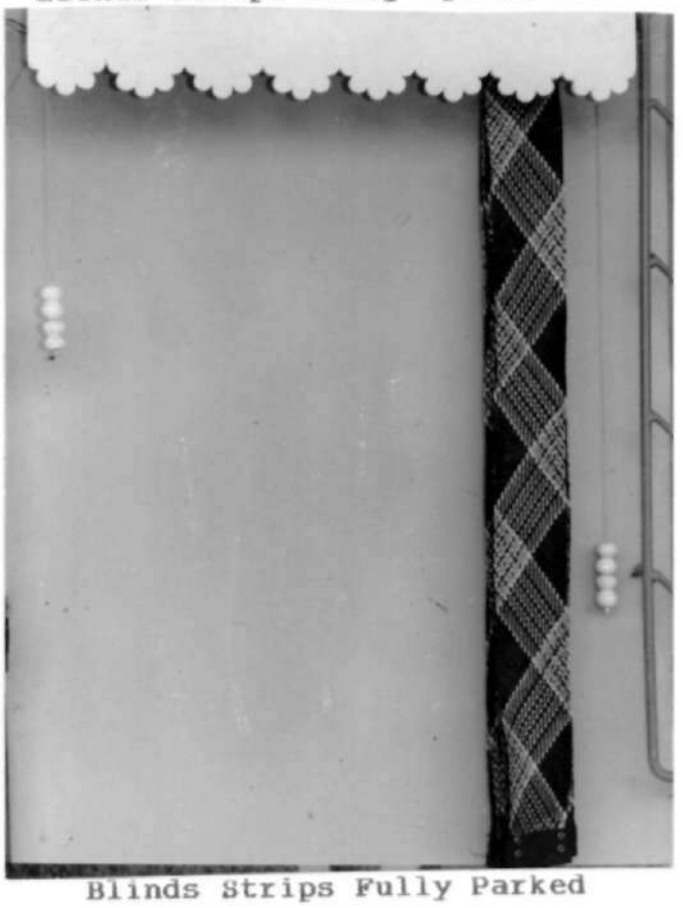


Fig. 20 Blinds Strips Fully Parked

CHAPTER IV

4.0. RESULTS AND DISCUSSIONS

A desire and search for new designs, innovation and beauty has been one of the characteristics of man; It has even become more accentuated in comtemporary times. Oguntona (1986), mentions that, today, even the average house wife looks at rich colour charts before deciding on how to redecorate her room. This study seeks to contribute to the fulfilment of this desire by producing new designs for comtemporary window blinds using palm leaves. This chapter will focus on the evaluation of the results of the design samples and the constructed window-blinds. The evaluation is based on their aesthetic qualities.

Jopling (1971), defines aesthetic qualities as the beauty or worthiness of an art work or design. In reference to Meier, Oguntona (1986), reports that, aesthetic judgement of art work is the ability to recognise the aesthetic quality residing in any relatioship of element within an organisation. He further explains that in the creative process, aesthetic judgement is very vital, because it enables the artist to assess whether his work is satisfactory or not, so as to make necessary amendments.

Beside evaluating the result of the design as already stated, this chapter, will contain the calculation of the number of strands and palm leaves used in weaving each of the design samples and the window blinds itself. Report of

the oral interview had with the weavers and dealers of the Hausa mats and materials will be produced here. The design result or their aesthetic qualities and calculation of the number of strands and palm leaves used for each of the designs are discussed as follows:

4.1. "CHEST-RIBS"

This design which depicts the Chest-Ribs has already been fully explained in chapter three. It is a multi-coloured design, made of green, red and creamy colour. The pattern can be seen concentrated in the centre, in narrow lines of cream colour with patches of red, which represent the ribs. These ribs converged at the middle of the design in red colour, which also depict the flow of blood in the heart. The green colour was used to illustrate the peaceful state of the heart.

The design is generally intricate and have a strong colour effect. The large plain creamy areas on both ends, acting as a background, helps to advance or enhance the boldness of the centre pattern, thereby drawing the viewers' attention to the centre. If an imaginary vertical line is drawn through the middle, it will show that both sides of the design are identical. Symmetrical balance was achieved in this design. Generally this is aesthetically pleasing design.

The dimension of the design sample is thirty six centimetres length-wise and ten centimetre width-wise. Each

centimetre contains three pairs of strands. The number of pairs used in weaving the whole unit therefore, was one hundred and eight pairs, making a total of two hundred and sixteen strands. There are approximately three pairs of stands in a palm leaf. Thus, the number of palm leaves used in this design was thirty six

Summary of Calculation

Length of the sample		=	36 cm
Width of the sample		=	10 cm
Pairs of strands per centimetre		=	3 pairs
Total pairs of strands in the whole unit	36 x 3	=	108 pairs
Total number of strands used	108 x 2	=	216 strands
Approximate pairs of strands per palm leaf		=	3 pairs
Total number of palm leaves used	$\frac{108}{3}$	=	36 leaves

4.2. "BASKET STRIPS"

The colours used for this design are yellow, purple and yellowish purple (complementary colours). The yellowish purple colour makes the work to have a cool appearance. The small diamond shape created by the purple and yellowish purple in the centre enhance the beauty and simplicity of the design. There is an equal distribution of the colours thereby creating a balance and unification.

The length and width of this sample are 35 cm and 10 cm respectively. As a centimetre contains three pairs of

strands, making a total of one hundred and five pairs or two hundred and ten strands used in the weaving of design. There are approximately three pairs of strands in a leaf, so a total of thirty-five palm leaves were used for the sample.

Summary of Calculation

Length of the sample		= 35 cm
Width of the sample		= 10 cm
Pairs of strands per centimetre		= 3 pairs
Total pairs of strands in the whole unit	35 x 3	= 105 pairs
Total number of strands used	105 x 2	= 210 strands
Approximate pairs of strands per palm leaf		= 3 pairs
Total number of palm leaves used	105 / 3	= 35 leaves

4.3. "FLASH"

This design depicts sudden quick bright light coming from two cars in opposite directions. The large creamy colour running through the centre, represents the full light, while the narrow creamy colour running across one another in diamond pattern illustrates the rays of light. The narrow red light projecting from the left to the right below, signifies danger light. The green colour is used to represent the surrounding.

Although there is the dominance of the green background, the tiny red light or danger light is still conspicuous,

fulfilling its agressive nature. The green colour gives the work a very cool appearance and also creates a feeling of rest and stability. The simple repetition of the rays of light forming the diamond pattern makes the design look simple, united and beautiful. There is an equal or skillful representation of all parts of the design, giving the work a symmetric balance.

This design is thirty-three centimetres in length and ten centimetres in width. Three pairs of strands were used to weave a length of one centimetre. Therefore, for the whole sample, ninety-nine pairs of strands were used (which is equivalent to one hundred and ninety eight strands). A palm leaf contains approximately three pairs of strands, so the number of palm leaves that was used for the design was thirty-three.

Summary of Calculation

Length of the sample		= 33 cm
Width of the sample		= 10 cm
Pairs of strands per centimetre		= 3 pairs
Total pairs of strands in the whole unit	33 x 3	= 99 pairs
Total number of strands used	99 x 2	= 198 strands
Approximate pairs of strands per palm leaf		= 3 pairs
Total number of palm leaves used	$\frac{99}{3}$	= 33 leaves

4.4. "RUGGED ROAD"

This design is made up of shades of black, brown and yellow colours. The road is represented in black with the darkest shade of brown colour running from one end of the design to the other in a zig-zag form. The yellow and light brown represent the wind and dust (Harmattan effect). Although some part of the road look ill-defined due to the dust that is littered all over the place, yet the dominating black on the curved areas of the road has helped to create some contrast between the road and the background (wind and dust). The yellow and light colour, representing the wind and dust, helped to make the design relatively bright.

The length of this design is thirty-six centimetres and is ten centimetres width-wise. As usual, there are three pairs of strands in a centimetre, making a total of one hundred and eight pairs and two hundred and sixteen strands in the whole unit. There are approximately three pairs of strands in a palm leaf, the total number of palm leaves used for this design was therefore thirty-six leaves.

Summary of Calculation

Length of the sample		= 36 cm
Width of the sample		= 10 cm
Pairs of strands per centimetre		= 3 pairs
Total pairs of strands in the whole unit	36 x 3	= 108 pairs

Total number of strands used 108 x 2 = 216 strands

Approximate pairs of strands per palm leaf = 3 pairs

Total number of palm leaves used $\frac{108}{3}$ = 36 leaves

4.5. "CALMNESS"

Complementary colours were used to produce the effect of calmness in this design. The colours are yellow and purple. The raw or crude effect that otherwise would have been produced by the use of these complementary colours was reduced by the addition of a drop of the purple to the yellow colour. This in effect portrays a state of rest, harmony, calmness or coolness in the design. There is order in the work, and the design generally looks beautiful.

The dimension of this design is thirty six centimetres length-wise and ten centimetres wide. Three pairs of strands were used to weave a centimetre length. The total number of pairs and single strands used therefore, were one hundred and eight and two hundred and sixteen respectively. As a leaf contains three pairs of strands, it makes a total of thirty six palm leaves that was used in weaving the whole sample.

Summary of Calculation

Length of the sample = 36 cm

Width of the sample = 10 cm

Pairs of strands per centimetre		= 3 pairs
Total pairs of strands in the whole unit	36 x 3	= 108 pairs
Total number of strands used	108 x 2	= 216 strands
Approximate pairs of strands per palm leaf		= 3 pairs
Total number of palm leaves used	$\frac{108}{3}$	= 36 leaves

4.6. "FOLDED PAPER"

This design represents a piece of paper that is folded. It is made up of deep violet, light violet and creamy colours. The deep violet which has a triangular shape at the background helps to create a sharp contrast. "The folded paper" becomes the centre of focus and is given a visual attention. The colours look monochromatic, thereby creating a state of rest or coolness in the design. There is a symmetric arrangement of the colours on both sides of the work. The design looks simple and bold. The ryhthmic movement of the broken creamy lines give the work a sense of continuity. These characteristics made this sample to be chosen as the design best fitted for the sample window - blind.

The design has a dimension of forty six centimetres length-wise and is ten centimetre wide. A centimetre contains three pairs of strands, making a total of one hundred and thirty-eight pairs. The total number of strands in the whole unit therefore, is two hundred and seventy six

strands. A palm leaf contains approximately three pairs of strands. The total number of palm leaves used in weaving this sample is forty-six.

Summary of Calculation

Length of the sample		= 46 cm
Width of the sample		= 10 cm
Pairs of strands per centimetre		= 3 pairs
Total pairs of strands in the whole unit	46 x 3	= 138 pairs
Total number of strands used	138 x 2	= 276 strands
Approximate pairs of strands per palm leaf		= 3 pairs
Total number of palm leaves used	138 / 3	= 46 leaves

4.7. **WINDOW-BLINDS**

The design for window-blinds is a reproduction of the design sample titled, "FOLDED PAPER". These window-blinds can be liken to Draw-Curtains. As described by Wilson (1960), draw-curtains are usually of opaque fabric and they hung so that they may be drawn across the window to give privacy. They are normally hung straight or vertical on some rigid horizontal rod or transverse track. The suspension fitment may be exposed or concealed by a valance, pelment or window cornice.

He explains valance or cornice as the name given to piece of drapery arranged at the head of the window and

intended as a decorative covering to the top of the curtains and the way in which these are suspended. They are basically of a horizontal, rectangular shape but with curved or shaped bottom lines, edged with some form of decorative fringe. Valance may be of rigid materials, such as, carved wood or plastic. The wood may be plain, painted, wall paper covered, faced with leather mirrors, tiles, mosaics and all manner of facing materials.

Similarly, these window-blinds are made of opaque material - palm leaves. The blind strips are hung straight on rigid horizontal wires in such a way that they can be drawn or packed together one behind the other to allow for ventilation. They can also be half-way spread out or fully spread out to give complete privacy. There is a carved wooden cornice or valance (face box) which was painted white to enhance the beauty of the design and also conceal the wire upon which the blind strips are hung.

Whichever way the blind strips are drawn, a particular aesthetic is produced. In figure 20, where the strips are fully packed together, the folded paper appears in a continuous and vertical zig-zag pattern or diagonal movement. In figure 18, where the strips are half-way spread out, the folded paper forms a complex and overlapping zig-zag pattern. In figure 19, where the strips are fully spread out, the folded paper and purple background formed a diamond pattern.

Generally, unity is achieved in the design by equal repetition of the motif (folded paper). In other words, every part of the design is skillfully blended. The design is generally bold and it has a sense of colour value ranging from white to light purple and dark purple. The purple fabric and eye-lids used for the finishing at the bottom of the strips contribute immensely to the beauty of the design. The contrast between the motif (folded paper) and the purple background, makes the work to have a bright but restful and cool appearance.

This window-blind could be used in any of the following places: Restaurants, Hotels, Homes, Hospitals, Churches and Offices. Wilson (1960), suggests the type of colours that could be used in the various places already mentioned. Stated below are his suggestions.

Restaurants

Cool, bright colours and illumination are needed when the client are expected to eat quickly and move on. In more luxurious restaurants, where the client are desired to linger and relax over the meal, soft subdued colours and lighting are best.

Hotels

The dinning rooms, guest room and reception must be inviting. Mellow colours are recommended for general

surfaces with deeper harmonies for floors and furnishings in dining rooms. In guest rooms, medium or cool tones are best on surfaces, while bright colours are best in reception.

Hospitals

Colours in hospitals need to be technically and psychologically correct. Areas such as corridors and waiting rooms require more colourful and varied treatment than is desirable in other departments. Patients' areas need to have soft subdued colour, since strong colour and tone contrast are distressing to sick persons. A quiet, cool, restful effect is preferable with the chronically ill. Sisters and interview rooms may have a slightly stimulating character: cool colours with some small areas of medium value and warmer hue. Nurses' stations may have livelier colour than is used any where in the ward, but distraction must be avoided.

Churches

The basic concept of a church interior, is one of simplicity, beauty and dignity, creating an atmosphere of peace and reassurance. Thus the body or surface of the church should have quiet and subdued colours.

Offices

Where public relations are involved as with banks etc, the colour scheme must be designed to give the character

associated with that type of business. In offices not frequently visited by the public, the major objective is the workers' well-being and efficiency. Cool and bright colours are preferable to prevent distraction.

Homes

In the home we have the bedroom, kitchen, dining room, study room, bathroom, drawing room, dressing room, hall etc. The window blinds could be used in any of these rooms or part of the home. For instance in the dressing room, the strips could easily be adjusted or drawn opened to obtain good natural lighting. It could also be used in the hall where easy circulation of air and good ventilation or complete privacy may be needed. This is separately achieved when the blinds are fully parked or spread out. It could also be used in the bedrooms to allow for ventilation or complete privacy by adjusting the strips to suit the intended purpose.

Calculation of the number of strands and palm leaves used for the window-blinds

The window - blinds comprises of seven mat strips of one hundred centimetres (100 cm) in length and ten centimetres (10 cm) in width. Three pairs of strands were used to weave one centimetre (1 cm) length. The number of pairs used for each strip therefore was three hundred, making a total of six hundred strands. So for the seven strips, two thousand, one hundred pairs of strands were used,

making a total of four thousand, two hundred strands. There are three pairs of strands per palm leaf. Therefore the total number of palm leaves used for the whole blinds were seven hundred palm leaves.

Summary of Calculation

Length of the strip	= 100 cm
Width of the strip	= 10 cm
Pairs of strands per centimetre	= 3 pairs
Number of strands per centimetre	= 6 strands
Pairs of strands for each strip	= 300 pairs
	(600 strands)
Pairs of strands used for the seven strip	= 2100 pairs
Approximate pairs of strands per palm leaf	= 3 pairs
Number of palm leaf per centimetre	= 1
Number of palm leaves per strip	= 100 leaves
Therefore, for seven strips	= 700 leaves

ORAL INTERVIEW

The oral interview was conducted to find out the raw materials used for the Hausa mat weaving, their sources, their preparation and the weaving technique. The data collected for the study were from two groups, the weavers and dealers of the raw materials. Due to the fact that nearly all the respondents have similar answers to all the questions, only ten of the weavers and dealers were randomly seleceted and interviewed. According to Osuala (1982),

there is no minimum or maximum number of respondants for an adequate sample. The question of how large a sample must be to be adequate depends on the particular situation. Each situation presents its own problems. He emphasises that if the phenomena under study are homogenous, a small sample is sufficient. As this is true in this study, only six weavers and four dealers were interviewed. The following tables show the questions and responses of the respondants (see appendix).

CHAPTER V

5.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1. FINDINGS

The following findings were made in the course of the study:

1: It was discovered that a big sewing needle could be used for slicing the palm leaves in place of a knife and it splits faster.

2 That a pair of scissors is more convenient to handle and more effective in cutting the base of the palm leaves during the slicing process than a knife

3. It was also observed that the narrower the strands used the finer and more beautiful the mat produced.

4. It was noticed during the dyeing that, the strands expand to about twice their width and later shrink back to their normal size after drying. The expansion is due to the water imbibed by the strands. As the water dries out, the strands return to the normal size.

5. Multicoloured dyeing of the leaves or strands is possible and was successful with tie-and dye technique.

6. When dyed strands are not properly dried before used for weaving, they make the width of the woven strip irregular and the whole structure weak.

7. When dry strands are soaked in water for some minutes before they are dyed, they absorb dye faster than when they are not wet.

8. From the experiments, it was discovered that the design samples made with dyed multicoloured strands, produced more complex patterns than those dyed in one colour.

9. Weaving done using pre-planned drawings or drafted patterns are faster than when the pattern had not been drafted.

10. Both the design samples made with pre-planned drawings and those with undrafted drawings have their individual and unique aesthetics.

11. When weaving, if the two hands are not properly coordinated, it makes one side of the woven strip longer than the other or the woven strip irregular.

5.2 CONCLUSION:

The areas covered by this study include:

1. Processing of the raw material for production of the window blinds.

2. Documentation of the mat weaving technique.

3. Drafting of design patterns as reference for weaving.

4. Weaving of both the drafted and undrafted designs into short samples.

5. Evaluation of the aesthetic qualities of the woven design samples.

6. Selection and usage of the best woven design samples as a model for production of the constructed window blinds.

5.3 GENERAL RECOMMENDATIONS:

Weaving of palm fronds into mats, window blinds or any other product is a craft, which if given special attention could contribute immensely to the upliftment of the standard of living of the people engaged in it and also the general economy

of the country. According to Cardew and Pupils (1983), the key factor in search for self-reliance in developing countries is to establish small industries which will mainly be producing local craft.

Heinrich and Hamburg (1980), also records that in Germany, the artist - craftsman is a small enterpreneur producing particular goods; that although the individual business may be small, it can still produce a living for the individual owener and his staff. They add that recognising the potentials inherent in the activities of the craftsmen, the German government in 1990 established training centres for craftswork. There are other devleoped countries where craft is highly esteemed, such as in Japan, where there are craft universities and school (e.g. Craft Universities in Tokyo and Tsukuba).

Nigeria is a developing country blessed with talented, but unrecognised craftsmen and women, whose talents are decaying or dying due to a lack of appreciation of their craft. It is advisable that the government draws a clue from those advanced countries in giving appreciation and recognition to craft work. Small craft industries and training centre should be established in different parts of the country. The adoption of such a policy as this will encourage young school leavers, the physically handicapped, pensioners and other job seekers to explore the different aspects of the craft-weaving, carving and pottery and earn a living for themselves, thereby making them gainfully

employed and self_reliant. This will contribute greatly towards improving the country foreign earnings as some standard craftwork could be sold outside the country.

5.4 RECOMMENDATIONS FOR FUTURE RESEARCH

Based on the findings and experience acquired during the course of the study, the following recommendations are made:

1. Future research should be conducted on colour fastness of the local dye stuff (Galura).

2. Research study should go into experimenting with other materials other than palm fronds that can adequately be used in producing other woven items.

3. Future research should attempt to introduce some of the design patterns discovered in this research into woven fabric.

4. There is need to utilize the weaving technique documented in this research by introducing mat weaving into the school curriculum as part of the craft taught.

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APPENDIX

A

QUESTION 1: What are the raw materials used for the mat weaving and how do you obtain them?

Respondants	No of respondants	Responses
Weavers	6	The raw materials are "Kajinjiri" (Hausa name for deleb palm leaves) and "Galura" (Hausa name for local dye stuff). We buy them from dealers.

QUESTION 2: Are the palm trees cultivated?

Respondants	No of respondants	Responses
Dealers	4	No. They normally grow wild around rivers, streams and valleys.

QUESTION 3: How do you obtain the Kajinjiri?

Respondants	No of respondants	Responses
Dealers	4	There are people whose occupation is to cut the Kajinjiri or (deleb palm leaves) from where they grow wild. They then sell to us in different bundles at varying prices.

QUESTION 4: Do you normally buy them in dry or fresh form? If fresh, how do you dry them and for how long?

Respondants	No of respondants	Responses
Dealers	4	Usually in the dry form but some times fresh. The drying takes between three to five days.

QUESTION 5: In how many different colours do the Kajinjiri come?

Respondants	No of respondants	Responses
Dealers	4	Two: green and yellowish

QUESTION 6: Which of the colours is more useful for mat weaving and why?

Respondants	No of respondants	Responses
Dealers	4	The creamy type. They are newly sprang-up leaves and are softer.
Weavers	6	The creamy type. It is more pliable, softer and last longer. However, the green type can also last long if it is not too matured.

QUESTION 7: Are the Kajinjiri used only for mat production?

Respondants	No of respondants	Responses
Dealers	4	No, they are also used for other products, such as hat and local fan.

QUESTION 8: How do you process the Kajinjiri for weaving?

Respondants	No of respondants	Responses
Weavers	6	The leaves are split into tiny strands with a knife after removing the mid-ribs and are finally dyed and dried.

QUESTION 9: Into how many pairs of strands do you normally split each leaf?

Respondants	No of respondants	Responses
Weavers	6	It depends on the size of the leaf and the individual weaver. It could be split into two or three pairs.

QUESTION 10: How do you obtain the dyes?

Respondants	No of respondants	Responses
Weavers	6	We buy them in sachets from the market. However, some of the dyes can be made from dye producing plants, such as "RAYAN" roots from which yellow colour is extracted.

Detailed information on how to extract the dye from "Rayan" roots has been provided in chapter three (page)

QUESTION 11: How do you normally carry out the dyeing?

Respondants	No of respondants	Responses
Weavers	6	We use pot or iron bucket to boil the Kajinjiri in dye solution for some times after which they are dried.

QUESTION 12:. Are there some colours you mix together to get others?

Respondants	No of respondants	Responses
Weavers	4	Yes. We get black by mixing green and violet colours together.
	2	No.

QUESTION 13: What are the most readily available colours in the market?

Respondants	No of respondants	Responses
Weavers	6	Yellow, Red, Green, Purple and Orange.

When the weavers were asked about the blue dye, they said it is very scarce and that is why they hardly used it

QUESTION 14: Which of the colours do you like best and why?

Respondants	No of respondants	Responses
Weavers	3	Yellow, green and purple. They are what our parents were using.
	2	Yellow, Orange, Green and Red. Because our customers like them and they are the colours used by our family members.
	1	I have no choice.

QUESTION 15: How did you learn the weaving?

Respondants	No of respondants	Responses
Weavers	6	From our parents, because it is their occupation.

QUESTION 16: Do people normally come to learn the weaving, and how long does it take them to master it?

Respondants	No of respondants	Responses
Weavers	3	Yes. Between 4 and 5 days if they are determined
	2	Yes, but not often. It takes them about a week.
	1	No. They only come to watch.

QUESTION 17: Do you also teach the learners the patterns along with the normal weaving?

Respondants	No of respondants	Responses
Weavers		We don't teacn others our pattern. Because that is what people use in identifying our mats in the villages.
	2	No. It is difficult to teach.

The weavers seem to guard their design very jealously as they consider them their occupational secrets that must not be revealed any how. For this reason, after the researcher has been taught the weaving process, she was advised to apply the coloured or dyed leaves the way she likes in order to develop her own patterns.

QUESTION 18: What do you think about modifying your patterns to create new designs?

Respondants	No of respondants	Responses
Weavers	6	Changing them will mean deviating from what our parents have passed over to us. Therefore they must not be modified.

From the answers to Questions 14 - 18, it can be seen that the local weavers are so firmly stuck to their parents' opinions and tradition that they find it difficult to accept any suggestion that tends to modify their products or designs in order to make any contemporary innovations.

QUESTION 19: Who are your customers and what do they use the mat for?

Respondants	No of respondants	Responses
Weavers	4	The Villagers. They use them as seat and beddings.
	2	All categories of people specially the muslims who use it during their prayers

QUESTION 20: How long does it take to make a full mat?

Respondants	No of respondants	Responses
Weavers	6	It depends on the size of the mat (small, medium and large) and how fast the weaver is.The large size can take an averagely fast weaver between 4 to 5 days.

QUESTION 21: How do you produce the mat?

Respondants	No of respondants	Responses
Weavers	6	By first weaving it in a long strip of a desirable length and later sewing it into a drum-like structure (cylindrical shape) with a big needle and finally cutting one side of it open to form the mat.

QUESTION 22: How wide should the side of the mat be?

Respondants	No of respondants	Responses
Weavers		As wide as one's palm can effectively handle and control.

QUESTION 23: If one makes a mistake, how can it be corrected?

Respondants	No of respondants	Responses
Weavers	6	By loosening the woven row to where the mistake is made and after correction, the weaving process is continued again.