DESIGN AND PRODUCTION OF INNOVATIVE WOVEN UPHOLSTERY FABRIC DESIGNS USING THE BROADLOOM

BY

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(B A. INDUSTRIAL ART - TEXTILES)

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CERTIFICATION

I hereby declare that this submission is my own work towards the MFA and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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Supervisor`s Name	Signature	Date

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Head of Department's Name	Signature	Date

This project is dedicated to Mr David George Apau of blessed memory, Madam Theresah Opoku, Mr Simon Aboagye Poku, Rev. Fr. Anthony A. Appiah and to all persons who in one way or the other have contributed immensely to the success of my education.

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ABSTRACT

TITLE: DESIGN AND PRODUCTION OF INNOVATIVE WOVEN UPHOLSTERY FABRIC DESIGNS USING THE BROADLOOM

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Weaving is identified as one of the ancient forms of fabric construction. It gives meaning and identity about the people as far as their beliefs, religion and traditions are concerned. Upholstery fabric designs for furniture employed in Ghana are imported and are of foreign influence. Even though these fabrics have their aesthetic and functional values, observations proved that upholstery fabric designs can be hand-woven to give meaning and identity to furniture. In view of this, the study identifies and selects suitable weave structures that can be hand-woven to satisfy furniture decoration. Again, the study reveals the possibilities of using the broadloom to weave upholstery fabric designs. Types of Upholstery fabrics and their characteristics were reviewed based on the conceptual and theoretical framework of the study. Descriptive and studio/practice-based research methods were employed under qualitative research approach as the research design for the study. The study further presents the systematic processes involved in producing the design samples. The study unearths the aesthetical and functional purposes of hand weaving in upholstery fabric designs. Even though, there were merits and demerits of the woven samples, the durability of hand-woven and machine-woven fabrics for upholstery depends on the type of yarns, weave structures and most importantly on the rate and exposure of the furniture. It is therefore recommended that, the skills of hand-weaving

should be encouraged and further studio practicals should be carried out to increase the knowledge of hand-woven fabrics in other textile applications.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The relationship between design and production is the planning and execution of a conceived idea or plan. The plan should anticipate and compensate for potential problems in the execution process. Design involves problem-solving and creativity. In contrast, production involves a routine or pre-planned process.

A design may also be a mere plan that does not include a production or engineering process, although a working knowledge of such processes is usually expected of designers (Ward, 2010).

According to Seymour (2002), a design does not have to be new, different or impressive to be successful in the market place, but it must fulfil a need. He however, explained that, the processes of designing do lead to innovative products and services.

Textiles span many categories of human want and need. Modern manufacturers distinguish apparel textiles for the body from the coverings of walls and furniture. Hand-made cloth supplies equally varied domains. Within each domain, some fabrics meet practical demands while others communicate meanings or express artistic taste (Schneider, 1987).

Textile design associates itself to the making of creative, stylish and contemporary designs. It requires special skills to create innovative designs. The core areas of textile designing involves the following: designing fabric by using different techniques comprising printing, weaving, ornamenting fabric, print technique, tracing embroidery and colour detailing, providing support to the clients to visualize the

design and helping the clients correct samples while executing prototypes (Textile Design, 2010).

"Upholstery" according to the Columbia Encyclopaedia (2010) is a general term used to describe household fittings, hangings, curtains, cushions and covers. It also refers to stuffed, padded and spring-cushioned furniture, such as chairs and sofas, or to the usually decorative materials and fabrics that cover them.

Maxin (2010) explains that, in textile upholstery, fabrics, plastics, leather and synthetic leather serve as furniture coverings. The appearance of upholstery fabrics is the most visible indication of fashion and quality, and nothing has a great effect on the look of upholstered furniture than the fabric designs. Moreover, upholstery fabrics need to be attractive and also make the furniture comfortable and durable.

A pre-study conducted by the researcher proves that, plastic, synthetic leather, leather and machine-woven fabric designs have flooded furniture upholstery in Ghanaian homes and offices. These woven fabrics are produced with designs under foreign influence which lack the creativity and meaning of Ghanaian identity. Some of these fabric designs from the researcher's point of view can be created with hand-woven skills locally to serve the same purpose of furniture decoration.

Albers (1974) adds that, with only a few exceptions all fabric constructions are elaborations or combinations of the basic weaves. With reference to Albers' statement, the researcher is of the view that, some upholstery fabric designs can be hand-woven locally with the broadloom to suit furniture decoration. In spite of the fact that the broadloom has a limitation of four shafts, there are possibilities of exploring different weave structures within the construction of a particular fabric design. Again, there are certain unique weave and colour effects that can be achieved

in hand-woven fabrics which can influence the aesthetic and visual appeal of furniture.

In view of this, the project seeks to design and produce weave structures using the broadloom with the aim of discovering innovative upholstery fabric designs and to encourage the use of locally made upholstery fabrics.

1.2 Statement of the Problem

A survey on upholstery market by the researcher reveals that, hand-woven fabrics have not been exploited in furniture upholstery. Although hand-woven fabrics have been used for table covers, rugs and other textile purposes, their applications in upholstery furniture coverings are limited because of developments and complexities in modern woven upholstery fabric designs.

Woven upholstery fabrics structures whether simple or complicated, are produced with dobby or jacquard looms which are usually controlled by CAM systems. The majority of commercial fabrics are woven on computer controlled Jacquard looms. Wiley (2008) confirms that, in the past, simpler fabrics were woven on dobby looms and the Jacquard looms were reserved for more complex patterns, but as computer controlled Jacquard looms have become more popular it is more economical for mills to weave all fabrics on Jacquard looms so that one setup may be used for all designs.

The utilisation of computer controlled looms for single setup woven designs relatively produces similar fabric designs with insignificant differences with regards to design individuality and novelty. Moreover, Atwater (1924) attests that, hand-woven fabrics on the other hand have design individuality and charm – they wear

better, look better, last longer and are more appropriate for many uses than machine woven materials.

Although machine-woven upholstery fabric designs for furniture coverings are justified, preliminary studies and observations indicate that, innovative and customised upholstery fabric designs can be woven with the broadloom to give symbolic meanings and identity to furniture. Again, it is believed that, as the knowledge of hand-weaving is extended, there will be an increasing demand for hand-woven textiles. This set the platform for the study to produce innovative woven upholstery fabric designs on the broadloom mainly for local consumption.

1.3 Objectives of the study

1. To identify yarns and weave structures that are suitable for hand-woven upholstery fabrics.
2. To produce woven samples with identified yarns and structures for upholstery fabric designs using the broadloom.
3. To assess the suitability of the woven samples for local upholstery designs.

1.4 Research Questions

1. Which type of yarns and weave structures can be exploited for upholstery fabric production?
2. What are the possibilities of employing the Broadloom in weaving innovative upholstery fabric designs?
3. What intrinsic/extrinsic qualities or properties justify the woven samples for upholstery application?

1.5 Delimitation

In woven upholstery, some fabrics are woven manually or mechanically. The project concentrates only on hand-woven upholstery fabric designs. Even though there eight-shaft broadlooms, the study utilises a four-shaft broadloom because of availability and accessibility. Again, it is limited to weaves possibly constructed with a four-shaft loom.

Although the research intends to produce hand-woven upholstery fabric designs, the objective is not for mass production but for individuals who have understanding, preference and taste for hand-woven fabrics.

1.6 Limitations

A major constraint of the study was the acquisition of suitable yarns for the upholstery fabrics. A preliminary study conducted on the textile market confirms that, the imported yarns are purposely for sewing / tailoring or embroidery and not for weaving. As a result, the researcher had difficulties in selecting suitable upholstery yarns from the available yarns on the textile market. However, the suitable yarns used for the study were given by technician. These yarns were acquired from the textile section's store room for the study.

Again, there were challenges on primary sources of data as most resource persons interviewed by the researcher were not willing to give detailed information and did not have in-depth knowledge on the subject. This, the researcher believes, was due to lack of education on the part of the upholstery merchandisers and furniture producers. This posed a great challenge during the analyses and interpretation of the data.

1.7 Definition of Terms

• Innovation: It is the introduction of something new or a new idea, method or device. However, an innovation can be big or small. Brand-new or just a little different, it doesn't matter. An innovation can be clearly complex or seemingly simple. Innovations are often thought of in terms of technical achievement, but can also be a design (Webster, 2006).

• Woven fabric: It is composed of two basic series of yarn: warp and filling. Weaving is the interlacing of these two yarns to form a fabric; the specific manner in which the two sets of yarns interlaced determines the weave (Tortora and Merkel, 2005).

• Plain Check: It is a weave and colour effect fabric characterised by patterns woven with squares or rectangles in one up, one down order of interlacing (Tortora and Merkel, 2005).

• Upholstery fabrics: They are defined as any fabric used as upholstery, e.g., to cover furniture. It is made in a great variety of fibres including cotton, linen, silk, wool, manufactured fibres and blends (Tortora and Merkel, 2005).

• Hand-weaving: It is defined as the art or technique of weaving on a handloom. It is also referred to the fabric produced by hand-weaving (dictionary.infoplease.com).

• Design Weave: It is an arrangement of form, colours or both in patterns as ornamentation produced by interlacing yarns in weaving (Tortora and Merkel, 2005).

1.8 Abbreviations Used

• CAM: Computer-aided Manufacturing

• A.D: Archaeology Dictionary

1.9 Significance of the Study

The production of upholstery fabric designs with broadloom unearths the artistic and creative knowledge of hand-weaving. Again, it gives symbolic meaning and identity to locally made furniture in the Ghanaian market. Additionally there is an introduction of innovative design structures for industrial upholstery fabric manufacturing which will assist hand-weavers and the nation as a whole.

Spirkin (2011) explains that, the main responsibility of art to society is the formation of a view of the world, a true and large-scale assessment of events, a rational, reasoning orientation of man in the world around him, a true assessment of his own self. But why does art have this function; because in its great production it is not only consummately artistic but also profoundly philosophical.

The philosophical importance of the study is therefore to change the perceptions of hand-woven fabrics, the limitations of the handloom and to encourage the attitude of explorations into the various traditional art practices.

1.10 Arrangement of the Rest of Text

Chapter two is the review of related literature which looks at the theoretical and conceptual framework of the study by authorities and researchers in the field of practice.

Chapter three defines the research methodology which discusses the research design and explains the data acquisition methods employed by the researcher to access information for the final project.

Chapter four concentrates on the tools, the materials, the equipment used in the study. It further outlines and explains the various preparation processes and the description of producing the innovative upholstery fabric design samples.

Chapter five deals with the presentation and discussion of the results of fabric design samples as well as the findings collected from the field research during the study. It further explains the artist statement about the researcher's art of weaving.

Chapter six takes a final look at the project on summary, conclusion and recommendations. The researcher shares experiences and understanding derived from the project and how it will benefit the field of study and the general public at large.

The project is completed with the list of references and appendices.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Overview

This chapter reviews the theoretical and conceptual framework of the study by authorities and researchers in the field of practice. Again, it gives an account of what has been published on the topic by accredited scholars and researchers.

2.1 Design

The word "Design" is employed in almost all disciplines of art. Its use can have a perspective meaning depending on the conceptual application of the word. A design can be defined as a "plan within a work of art" but this definition is seemingly basic to the art world including textiles. However, the term is reviewed from other authors to understand its conceptual applications.

According to Seymour (2002) design could be viewed as an activity that translates an idea into blue print for something useful, whether it is graphical, textiles, ceramics, service or process. The most important part of designing is translation of idea. A design doesn't have to be new, different or impressive to be successful in the market field, as long as it is fulfilling a need, but design methods do lead to innovative products and services.

Broadly stated, design is the art of creation. More technically speaking, design is the conscious, deliberate process by which elements, components, potentials, and tendencies just to mention a few are intentionally arranged in the space-time continuum in order to achieve a desired result. In its fullest, most potent expression, design is the imagining and bringing forth of new worlds or ideas (Mare, 2009).

Miller (2009) explains that, design is also intuition, that form of subconscious thought that leads to a deeper sense of knowing, often in the apparent absence of rational confirmation. Intuition is akin to an elongated insight that tells us we are on to something. It is the hunch that often underlies our efforts to perform rational analysis. It also involves reason, that fully conscious form of thought that assesses the problem and analyzes the possibilities for solution. It is the analytical process that relies on method and mathematics to assess, refine, and verify its various hypotheses.

Design, on the other hand, can be a conscious effort to create something that is both functional and aesthetically pleasing. For example, a graphic artist may design an advertisement poster. This person's job is to communicate the advertisement message (functional aspect) and to make it look good (aesthetically pleasing). It further explains that, design is often viewed as a more rigorous form of art, or art with a clearly defined purpose (Design and Art, 2009).

Dziers (2006) is of the view that, textile design associates itself in making creative, stylish and contemporary designs. Textile design requires special skills to create innovative designs. He added that, the core of textile designing is concept of designing fabric by using different techniques comprising printing, weaving, ornamenting fabric, print technique, tracing embroidery and colour detailing. It also provides support to clients to visualize the design and to assist them to correct samples while executing prototypes.

Textile design is not the same as textile production, although textile designers would benefit from working with various fabrics and materials. Textile designers create designs on textiles and they use fabrics, cloth, and upholstery to fashion a wide range of products. Textiles are the basis of linens, bathing products, fashion, interior design, and furniture. And, textiles have grown up to branch out into installation art

Furthermore, Textile designers plan and develop patterns, knit and weave construction, prints, textures and illustrations for fabrics and other materials that require the development of patterned surfaces. They plan the way a fabric looks and performs. They design the structure of the fabric and make decisions about appropriate yarns, colour use, surface patterning, texture and finishing (What is Textile Design, 2010).

Textile designers develop fabrics used in furniture, soft furnishings, clothing, vehicles and products such as luggage. They can apply the same skills to the development of patterns for wallpapers, laminates and patterned plastics. They design fabrics to satisfy marketing and manufacturing requirements. They balance aesthetic and functional aspects; they consider the nature of yarn types, thicknesses, weights and textures to produce fabrics to cost and production constraints.

This source concludes that, textile designers advise and liaise with others who work in industries where it is necessary to predict future colour trends. They monitor trends in industries such as interior design, automotive design and fashion and progressively evolve fabric styles to meet these specific needs (Textile Design, 2009).

The review of "design" exposes and explains the conceptual application of the word in various fields of study. From (Design and Art, 2009) a created design should serve both functional and aesthetical purposes. Furthermore the researcher agrees with Dziers (2006), who states that, Textile designing is the creation of stylish and contemporary designs. Again, it requires special skills to create innovative designs. The researcher is of the view that, the understanding derived from these authorities will assist in the creating challenging fabric designs which will serve both aesthetical and functional purposes for upholstery fabrics.

2.2 Weaving

In textiles, fabrics are manufactured in wide varieties and designs. And different designs and effects are produced on fabric with various mechanisms which are helpful to form different weaves and lots of design which enhances the look of apparels. Weaving is the one of the various mechanisms of fabric manufacturing and another conceptual term of the study that needs to be discussed.

Tortora and Merkel (2005) define weaving as the method or process of interlacing two or more sets of yarns or similar materials so that they cross each other at usually right angles to produce woven fabric. It further explains it is the act of causing two systems of yarn, warp and filling, to interlace. This may be done on a power or hand loom or by several manual methods.

Weaving is the textile art in which two distinct sets of yarns or threads, called the warp and the filling or weft (older woof), are interlaced with each other to form a fabric or cloth. The warp threads run lengthways of the piece of cloth, and the weft runs across from side to side. Cloth is woven on a loom, a device for holding the warp threads in place while the filling threads are woven through them. Weft is an old English word meaning "that which is woven". It concludes that, weaving in general involves the interlacing of two sets of threads at right angles to each other: the warp and the weft (Weaving, 2010).

The basic concept of fabric weaving explains the use of two sets of yarns namely warp yarns and weft yarns. The warp yarns are aligned parallel and run lengthwise in the fabric with tension for easy shedding. However, the weft yarns are used to interlace the warp crosswise at right angle in a certain order which defines the character of the fabric. In reference of the sets of yarns, tenacity should be considered very important when weaving.

2.3 Upholstery

Kelley (2009) states that, the term "Upholstery" refers to sofas, chairs and other seating with permanently attached covers of a fabric or leather. She explains that, two important features of Upholstery fabrics are form and function.

"Upholstery" according to (Columbia Encyclopaedia, 2009) is a general term for household fittings, hangings, curtains, cushions and covers. It also refers to stuffed, padded and spring-cushioned furniture, such as chairs and sofas, or to the usually decorative materials and fabrics that cover them.

Upholstery is the work of providing furniture, especially seats, with padding, springs, webbing, and fabric or leather covers. The word upholstery comes from the Middle English words - Up and Holden, meaning "to hold up". The term is applied to domestic furniture and also to automobiles, airplanes and boats (Upholstery, 2010).

The conceptual application of "Upholstery" in the project is defined as the decorative materials and fabrics used in covering furniture, specifically woven Upholstery fabrics.

2.4 Types of Weave

Woven fabrics are produced as result of interlacing two sets of yarns, warp and weft which runs lengthwise and crosswise respectively in the fabric. The order of successive movements between these two sets of yarns determines the physical appearance of the fabric identified as the weave or the structure.

Furthermore, fabric weaves are regarded as the structural pattern of different fabrics. Without the fabric weave, fabric may never be constructed. How loose, decorative, tight, nubby or soft a certain fabric is, depends largely on the fabric weave. They can also cause a huge variance regarding the fabrics durability or strength.

Luther (2010) states that, there are many kinds of fabric weave. The most common ones are Twill; Rib, Plain, Oxford, Basket, Satin, Uncut Pile, Chenille Weave, Dobby, Cut Pile, Double Knit, Leno, and Jacquard. Furthermore, fabric weaves are different methods wherein the various types of fabric are manufactured. There are actually a lot of different fabric weaves that are initially made due to various purposes. Also they can help in determining exactly how durable particular clothing is. Figuring out which type of weave works best for a specific type of clothing can prevent having an end product that easily becomes frayed.

Wynne (1997) states that, a weave refers to the order of interlacing of the warp ends or the weft picks. She further explains that, a weave repeat is the smallest number of threads required to show all of the interlacing in the pattern. She adds that, weaves fall into three main categories, namely Basic weaves (which are the most popular and include plain, twill, satin and those weaves that are developed from them), Fancy weaves and Compound weaves.

Grosicki (1975) again explains that, woven structures may be conveniently divided into two principal categories, as follows; Simple structures in which the ends and the picks interset one another at right angles and in the cloth are respectively parallel to each other, and Compound weaves which there may be more than one series of ends or picks some of which may be responsible for the "body" of the fabric such as the ground yarns, whilst some may be employed entirely for ornamental purposes such as "figuring" or "face" yarns.

Woven cloth can be plain (in one colour or a simple pattern), or it can be woven in decorative or artistic designs, including tapestries. Fabric in which the warp and/or weft is tie-dyed before weaving is called ikat. There are a variety of weaving techniques used to make fabrics. The techniques range from the simple, such as plain

weave to elaborate, such as tapestry. The weight and quality of a woven fabric depends on the weaving techniques used to produce it. Perhaps the most simple of all weaving techniques is the plain weave, which is generally used to produce lightweight, almost sheer fabrics such as muslin and cotton lawn (Parma, 2010).

Jacquard weaves, produced on a special loom, are characterized by complex woven-in designs, often with large design repeats or tapestry effects. Dobby weaves, requiring a special loom attachment, have small, geometric, textured, frequently repeated woven-in designs, as seen in bird's-eye piqué. Leno weaves, also made with a special attachment, are usually lightweight and open, giving a lace-like appearance, and are made by twisting adjacent warp yarns around each other, then passing the filling yarn through the twisted warps. Marquisette, casement cloth, and mosquito netting are produced by this method (Chandler, 2011).

The types of weaves have often been mistaken for types of fabrics. Each different fibre content advances towards the hand and drape of the fabric. There are many different types of weaves. Some are plain and some are fancy, but all use the basic "under & over" technique of weaving. The basic types of weaves are Plain weave, Twill weave and Satin weave (Types of weaves, 2007).

Pile weaves have cut or uncut loops that stand up on the surface of the fabric. Velvet and chenille are pile weaves. Jacquard weaves have a woven-in design created on a special loom. Damasks, tapestries and brocades are all Jacquard weaves. Novelty weaves however, are created by using a variation or a combination of the basic weaves (Upholstery basics, 2009).

Mabey (2010) identifies plain, decorative and pile as some of the many categories of weaves commonly used to make upholstery fabrics. The plain weave is strong, versatile and appropriate for many different fibres and blends of fibres.

When any fibre or blend of fibres is woven together, the visual texture and pattern of the fabric is created. There are two basic methods of weaving upholstered fabrics: Flat and Pile. These two weaves are the beginning of all the furniture fabrics. Flat weaves are tweeds, twills and satins. They have no pile although they may be course and nubby; shantung, for example, because of the uneven size of yarns used. Pile weaves are velvet, plush, terry cloth, velour and corduroy. The pile weave is raised loops, cut interlacings of double cloths and other erect yarns or fibres, deliberately produced on cloth forming the surface of the fabric (Selecting Furniture Fabric, 2008).

However, Abbort (1977) states that, fabrics fall into two categories: pile and flat. Pile fabrics include mohairs, velvets, freizes and velours. These are the best type of fabrics for rough wear because of their long wearing qualities. Flat fabrics are the jacquard or woven fabrics. They are the most popular fabrics and are divided into two groups: patterned and un-patterned. Patterned fabrics include damask, tapestries, brocades and brocatelles; un-patterned fabrics include plain weaves, twills, satins and basket weaves. Both types of woven fabrics are considered smooth surface materials and resist dust better than the pile fabrics.

According to Soller (2004), each weave type has its advantages and disadvantages. There is virtually no difference in the strength of the fabric and its weave. Choose weave based on aesthetics, how complex the curves are, and the weight of the fabric needed for its application. That being said, every time each fibre bends over or under another, that very small bend in the fibre can make "very" tiny strength differences. These differences should generally be ignored and are only mentioned for accuracy, not for fabric consideration.

2.5 Properties of Upholstery Fabrics

Since early human life began, there has been pinning of animal skins to frameworks to produce tables, chairs, beds and accessories. The early Egyptians created some very beautiful pieces that are still an inspiration to manufacturers today. Covered furnishings adorn many homes, offices and buildings; they provide good looks, comfort and style to interiors. Furniture can now be individually upholstered to match decor and functionality (Gates, 2008).

Upholstery fabrics are generally more durable than fabrics for other installations, such as draperies or decorative table covers. They are meant to be used for six to twelve years, on average, so they are often stronger fabrics by weave or through treatment or backing. Two general types of texture are used in upholstery namely, a smooth texture and a texture with a deeper relief or pile.

Smoother fabrics especially those with some sheen, tend to look more formal and restrained and are less prone to snagging. Often, however, smooth fabrics show wear more quickly. Where a smooth fabric is desired but durability is also required, a fibre blend that contains polyester or polyester microfiber, nylon, olefin or sturdy cotton might be considered.

Upholstery Fabric Information (2007) explains that, leather is another durable texture choice; good-quality leather should be expected to last for fifteen years, as opposed to seven years for fabric. Leather requires gentle living as it can be stained or scratched. There are many different choices for upholstery fabric. Leather is a very popular choice as an upholstery fabric, as it is delightfully soft yet resistant to spills and stains. Leather furniture can be rather expensive, although the same look can be achieved with the use of fake leather. The attractiveness of the napped suede look has lead to micro-suede gaining in popularity in upholstery fabric applications, replicating

the feel of real suede and adding stain resistance and durability, in addition to lower costs.

There are three basic types of fabrics: natural, synthetic and blends. All three have their advantages and disadvantages, but generally blending natural and synthetic will give you the best of both worlds. Cotton is perhaps the most popular natural fabric for upholstery. It is durable and offers good resistance against wear and tear, however stains to show on cotton very easily and cleaning it can be rather difficult. Pure cotton is probably not the best way to go if the furniture is going to receive a lot of traffic. Cotton blend is a much more sturdy fabric and is suited for everyday use.

A new type of synthetic fabric that is rapidly gaining popularity is microfiber fabric. These types of fabric are sturdy, soft to the touch and easy to clean. But, there are disadvantages to microfiber fabrics as well. Rayon and linen, for example, can wrinkle easily so these types of fabrics are most appropriate for furniture that doesn't get a whole lot of traffic. Other microfiber fabrics include acetate, acrylic, olefin and polyester (Choosing Upholstery Fabrics, 2008).

Rich upholstery fabric choices are chenille, suede and leather, jacquard, damask, tapestry and tweed. Velvet, satin or silk dupioni are other alternative choices of rich upholstery fabrics. Prints come in floral or contemporary designs or plaids and stripes. Natural upholstery fabrics like linen, cotton, silk or leather can be considered or opt for man-made fibers such as polyester and rayon. While the classic and elegance of natural upholstery fabrics cannot be denied, man-made fabrics are easier to maintain and resilient. Natural fibers tend to absorb stains faster. Blended upholstery fabrics can be opted for that gives the best of both worlds (Upholstery Fabric, 2009).

Larson (2010) states that, although vinyl upholstery fabric may seem like a good alternative to leather, it actually can be quite uncomfortable to sit on. Not only that but over time it has a tendency to crack as it ages which means it won't last nearly as long as many other types of upholstery fabric. The main benefit of choosing vinyl for your upholstery fabric is that it is easy to clean; however the uncomfortable texture and relatively short lifetime should be considered before choosing vinyl for furniture.

According to Blanchard (2007) there are several fabrics to use and here are their common characteristics. Cotton is a versatile fibre that is used for prints; it is woven and is comfortable to use in all climates. Linen is a high-end fibre that is crisp, tough and durable. Wool is strong, durable, and soft to the touch and resists water. Rayon is a smooth, soft, lustrous and comfortable fibre. It wrinkles easily when used alone though. Blended with other fibers, it adds silk-like lustre to the fabric. Nylon is strong and abrasive, and mildew resistant. It does not absorb water or other liquids easily.

Acrylic is a manufactured fibre that offers many qualities of wool, is a natural fibre and is used in plush or fleecy fabrics. Acrylic resists fading but creates small balls of fiber on the couch's surface. Olefin is strong, not prone to dirt and is used alone or used with other fibers. Polyester is a strong, resilient fibre that is blended with others. Silk is a strong, resilient, heavy fibre with a natural luster. The size varies from fine to heavy as in raw silk (Kicklighter, 2001).

Hopkins (2008) explains that, fabric on couches typically comes with a stain and soil repellant finish. If the fabric is not treated, purchase a spray-on form at a hardware store and apply it to the fabric directly. Fabric protection gives the time to pick up or blot away spills before they soak in. However, it does not prevent damage

to the fabric. If the couch did not have a stain repellant applied to the couch before purchasing, then one needs to apply it themselves.

Tremblay and Williams (2007) are of the view that, fabric choice is used to express preferences in colour, patterns, and textures. Fabrics with tight weaves and durable fibres like polypropylene or nylon typically stand up to the most active use. More formal fabrics like satins, brocades, or damasks are best reserved for seating where practicality is less of a concern. Fabrics that have a pattern woven-in tend to resist wear better than those that have a printed pattern. Furthermore, some types of upholstery fabric are better suited to specific areas. Furniture in high use areas (family rooms and kitchens) must be durable and easy to maintain. Elegant textiles with complex textures may be more suitable for low traffic areas such as formal living rooms.

Grovenor (2010) states that, different fabrics give varying results, they can be soft and luxurious, or coarse and hardwearing. It all depends on the primary function of the piece of upholstery, where it will be situated and the amount of use it will have to endure. The main types of upholstery fabric used are created from plant or animal fibres. Plant fibres produce several cotton canvas type materials while animal fibres include wool and silk. Animal skins that have been treated, like leather, are also used for upholstery, as they are renowned for their durability. Any item of upholstery style, benefits from the inclusion of some robust animal hide. Upholstery made exclusively from it is rather more expensive than other coverings.

2.6 Characteristics of Upholstery Fabrics

An important consideration when choosing upholstery fabric is its durability. Elegant chairs would need different treatment as compared to the family couch. The upholstery fabric must also be appropriate for the furniture it is covering. The design

must be balanced to the size of the room. The upholstery must be appropriate to the room and its overall decor (Upholstery Fabric, 2010).

Elizabeth (2010) states that, Upholstery fabric is very important in at least three ways:

- It plays a large role in creating the style of the furniture it covers.
- Its cleaning requirements and delicacy or durability play a large role in the type of use that the furniture is appropriate for and the time, energy, and expense involved in maintenance.
- Its cost may represent the largest percentage of the cost of the entire piece of furniture.

Fabric designs are the designs created on the fabric that play important part in making the fabric more beautiful and more fashionable. It reflects the craftsmanship as well as the customs or culture of the wearer. Fabric design patterns vary from small geometrical patterns to pictured designs. Sometimes it is also designed with religious figures for religious purposes. Checks, floral, geometric designs, oriental prints, jacquards are some of the common upholstery fabric designs (Fabric Design, 2009).

Most Upholstery fabrics are treated with a stain-resistant or crease-resistance finish, greatly increasing the durability of the fabric. A latex finish is sometimes applied to the back of loosely woven or pile fabrics to keep the grainline from shifting or to hold the pile in place. A heavy latex backing makes the fabric quite stiff and difficult to sew. Furthermore, some fabrics are woven so that the pattern or design is railroaded. This means running the lengthwise grain horizontally on the piece of the furniture rather than in the normal vertical direction. Railroading can save a considerable amount of yardage, especially in sofas (Upholstery basics, 2009).

Ivanova (2010) explains that, sofas and chairs tend to be very tightly upholstered in smooth, luxurious fabrics such as brocades, damasks and a variety of jacquard weaves. Most formal fabrics and trims tend to have sheen to them. Silk, satin glazed cotton, taffeta and velvet are popular fabric choices for home as are intricate patterns, tapestry and embroidered details. Colours vary from deep and rich greens, Burgundies, blues and rich neutrals to subtle shades of lighter colours.

A huge variety of upholstery and decorative fabrics covers rich textures solids, small-patterned coordinates, classical stripes and modern interpretation of classical, generous wide-repeat patterns. The colours are sophisticated, ranging from classical red, gold, black, blue and green shades to modern grey and silver tones. Woven upholstery and curtain fabrics that meet the high demand of contract business in terms of quality, design, colour, ease of care and longevity (New Collection, 2007).

Flat-surfaced fabrics like damask, brocade and satin show the effects of abrasion because the long yarns on the surface are subject to wear. Pile fabrics like frieze, plush and velvet withstand abrasion quite well if they are made of wool and linen with a high density of fibre. A pile fabric with cut loops mats more easily than one with uncut loops.

With velvets for example, although they are highly durable, they are susceptible to marking, especially cotton and silk velvets. If you want to use velvet in a high traffic area, it's best to select a poly blend with a tightly woven weave (Selecting Fabric for Upholstery, 2009).

A latex backing often is applied to upholstery fabrics to help stabilize them. The latex forms a coating that helps keep soil from sifting through. It keeps the surface yarns from shifting, prevents seam slippage, fraying and makes precise cutting

possible. Loosely woven fabrics should have an applied backing to ensure stability and longer wear.

Colgrove (2010) is of the view that, woven fabric does not stretch except on the bias. Woven fabric is made up of fibres which run straight at ninety degree angles to each other. Knit fabric has loops of fibre that allow the fabric to stretch. The amount of stretch and the direction of stretch are all variables.

Grovenor (2010) further explains that, the ability to constructively select the covering materials will add a certain touch of individuality and originality. A fabric can be chosen that fills all the criteria for durability, design and usability features and functions. The ideal upholstery fabric will enhance the structure of the furniture while offering it adequate cover from general use, wear and tear.

The significant aspects that must be taken into account when choosing an upholstery fabric are colour, style, thread count, durability, comfort and fade resistance. The fabric should obviously suit the furniture, but also enhance the beauty of the room. Colour determines if the fabric can resist stains and also sets the feel of the room. Durability is essential as you would want the fabric to last for a long time. A fabric's thread count determines how strong the fabric is and fade resistance determines whether or not the fabric can endure constant exposure to sunlight without fading. Fade resistance, however, may not be a problem if the room has adequate protection from the sun via your window blinds (Choosing Upholstery Fabrics, 2008).

Another consideration in selecting upholstery textiles is that the texture or pattern should complement the frame and enhance the line of a piece rather than disguise it. Neutral colours tend to suggest a serene, sophisticated look, but they can become listless. Yet strong patterns on large upholstered pieces have the potential to become tiring.

It further explains that, seams are less noticeable in a patterned fabric; the plainer the fabric, the more noticeable the seam. When motifs are matched in a patterned fabric, seams may deem to disappear to a large degree. Pattern locks in a particular style whereas textured fabrics with tonal variations may work well with a sequence of interior design styles, hide soiling and proved to be long-lived (Upholstery colour, pattern and texture, 2008).

Upholstery fabric is tightly woven fabric. The thread count is more and it wears better. It does not wiggle or move around. It is often heavy. It is tough, durable and do not soil or fade. It is sometimes also known as home furnishings or decorator fabric and is usually 54 inches wide. Upholstery fabric usually has a balanced weave, where all the yarns are about the same size and strength. A twill weave upholstery fabric resists wear and shows soil less than a plain weave of similar quality (Upholstery fabric, 2009).

Newman (2009) also attests that, Jacquard fabrics tend to be rather expensive, but the designs created in the fabric won't fade or wear out as easily as printed designs. Because the back of some of these fabrics often expose quite a bit of the thread used in the weave, they should be backed or used in situations where the back of the fabric will not be exposed. This type of weave is very popular for upholstery fabric, and most true tapestries are made in this manner.

The production of upholstery fabrics can be traced since the discovery of man when animal skins were used to upholster furniture. Upholstery fabric production used to be hand-woven but now mechanized to satisfy the demand of mass production. But in choosing upholstery, the choice of hand-woven and machine-made depends on the individual.

The yarns for upholstery as explained can be natural or synthetic but it is understood that, the use of blends (which explains yarns from natural and synthetic put together) will give a durable fabric for furniture. According to the review, cotton fibre dominates the natural yarns used for upholstery. Other fibres like polyester, nylon among others are also employed for upholstery.

Again, it is emphasized that, the fabric selected for the upholstery has a great impact on the final appearance, comfort and durability of the furniture piece. Colour and design obviously play a large part in the decision making but it is equally important to consider the fibre content, weave structure and any surface treatment.

Upholstery fabric weaves as deduced from the review can be flat or pile. The flat weaves are the basic weaves such as plain, twill, satin and sateen weaves whilst the pile are explain as the complex weaves like velvet, plush, corduroy among others. These weaves can be plain and decorative but their appearances depend on the order of interlacing. Jacquard patterns, when carefully analysed, may be seen to contain combinations of plain, twill, and satin weaves, even in the same crosswise yarn (Jacquard, 2011). This explains that, the use of the broadloom to weave upholstery fabric designs is practicable because, the complex weaves produced by machines are just the combinations of the basic weaves and tapestry effect. A major advantage of Jacquard machine is its ability to selectively pick individual yarns to create images in fabrics and this is a limitation with shaft looms which the broadloom is not an exception. Alternatively, the researcher is of the view that, combining the basic weaves to design upholstery fabrics is practically feasible with the broadloom.

However, the nature of the weave structure and its effects depend on the purpose of the fabric. Whether the woven fabric design is loose, tight, decorative, artistic, charming among others, the main objective of designing and producing

upholstery fabrics is the ability to balance the aesthetic and functional aspects of the fabric. Furthermore, the researcher in his quest to produce hand-woven upholstery fabric designs is not after aesthetics and functions but to communicate his understanding of weaving as a practice to the general public as attested by Spirkin (2011) who states that, like philosophy, art also has a profoundly communicative function. Through it people communicate to one another their feelings, their most intimate and infinitely varied and poignant thoughts.

CHAPTER THREE

METHODOLOGY

3.0 Overview

This chapter defines and considers the system of methods and principles used by the researcher in acquiring knowledge in the field of study. According to Webster (1985), to research is to search or investigate exhaustively. It is a careful or diligent search, studious inquiry or examination especially investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts or practical application of such new or revised theories or laws. It can also be the collection of information about a particular subject.

A methodology is a system of organizing principles underlying an area of study. It includes philosophical approaches, theoretical models, rules for creating hypotheses and operational concepts, rules about designing and conducting meaningful experiments and how to collect and analyse data, and rules for writing up results (Methodology, 2008).

Gray and Malins (1993) explain that, methodology can be referred to as research procedures in the field of Art and Design which explains the systematic approaches of the artist in executing a work of art.

Art methodology differs from science methodology, as the artist is not always after the same goal as the scientist. In art it is not necessarily all about establishing the exact truth so much as making the most effective form (painting, drawing, poem, novel, performance, sculpture, video, etc.) through which ideas, feelings, perceptions can be communicated to a public (Art Methodology, 2011).

Rolling (2010) explains that, arts-based research methodologies are characteristically emergent, imagined, and derivative from an artist/researcher's

practice or arts praxis inquiry models; they are capable of yielding outcomes taking researchers in directions the Sciences cannot go.

The research methodologies for this project includes descriptive research, exploratory research, studio/practice-based research, library research, population of the study, sampling, data collection instruments and data collecting procedure.

3.1 Research Design

Research designs are concerned with turning the research question into a testing project. The best design depends on research questions. The research design has been considered as a "blueprint" for research, dealing with at least four problems: what questions to study, what data are relevant, what data to collect, and how to analyse the results (Research-design, 2011). The research design chosen for the study is qualitative research design.

Qualitative research is a method of inquiry employed in many different academic disciplines, traditionally in the social sciences, but also in market research and further contexts. Qualitative researchers aim at gathering in-depth understanding of human behaviour and the reasons that govern such behaviour. The qualitative method investigates the why and how of decision making, not just what, where, when. Hence, smaller but focused samples are more often needed, rather than large samples (Qualitative-research, 2011).

Furthermore, it involves an interpretive, naturalistic approach to its subject matter and gives priority to what the data contribute to important research questions or existing information (Definition of qualitative research, 2011).

From the explanations above, characteristics of qualitative research design made it suitable to be employed in the project. The use of different types of yarn with

their respective strengths and weaknesses gave an in-depth understanding about the behaviours of these yarns. Again, it created an opportunity for investigating and exploring the possibilities of using these yarns in upholstery fabric designs. The study employs descriptive and exploratory methods of research based on qualitative enquiry for collection and presentation of data.

3.1.1 Descriptive Research

Descriptive research is a sort of research that is centered on presenting realistic and detailed explanation of people, events or works of art in details. The term "descriptive research" informs readers on the dual nature of this kind of academic paper. Again, descriptive research is written for the purpose of providing the readers with complete detail of events and emotions as they happen. Another function of descriptive research is to make an effort to present events, emotions, sentiments or ideas and images to the reader as realistically as possible (Descriptive research, 2011).

It is further explained that, the author of a descriptive research paper seeks to communicate to readers what they would see, hear, feel, think or even smell as if they were actually present in that environment. For this reason, a descriptive research makes use of strong and powerful adjectives which possess the ability to create pictures in the mind of the readers.

According to Knupfer and Mclellan (2001), description research method also emerges following creative exploration, and serves to organize the findings in order to fit them with explanations, and then test or validate those explanations. Many research studies call for the description of natural or man-made phenomena such as their form, structure, activity, change over time, relation to other phenomena and so on. The

description often illuminates knowledge that might not otherwise be noticed or even encountered.

This research method was employed by the researcher to effectively provide complete details of the processes, the equipment, the accessories, the techniques, the materials and the fabric design samples produced. Additionally, this method of research assisted the researcher in the explorations and explanations of findings.

3.1.2 Studio/Practice-based Research Method

Practice-based research is a form of research that aims to advance knowledge partly by means of practice. This type of research is an original investigation undertaken in order to gain knowledge and understanding. It includes the invention of ideas, images, performances and artefacts including design, where these lead to new or substantially improved insights in the field of practice. Moreover, practice-based research is also a research where some of the resulting knowledge is embodied in the artefact. Whilst the significance and context of that knowledge is described in words, a full understanding of it can only be obtained with reference to the artefact itself (Candy, 2010).

The research was conducted in the Textile weaving studio of Kwame Nkrumah University of Science and Technology. The production processes and the invention of ideas and explorations of the woven samples were executed solely in the studio, therefore this project is considered to be practice-based research and data was collected and recorded through observation during the exploration of the project.

3.2 Library research

The Main Library, the College of Art and Social Sciences Library and the Art Education Library of KNUST were visited to source relevant data for the study. The secondary data were collected from dictionaries, encyclopaedias, books which contain useful information on textiles fabric structures in general.

3.3 Population for the study

Castillo (2009) defines research population generally as a large collection of individuals or objects that is the main focus of a scientific query. It is for the benefit of the population that researches are done. He further discusses that, a research population is also known as a well-defined collection of individuals or objects known to have similar characteristics. All individuals or objects within a certain population usually have a common binding characteristic or trait. It may be finite if its members can presumably be counted or infinite if its members cannot be definitely known.

The population (objects) for this research comprises available types of yarn on the local market. However, due to the large size of the population, the researcher relied on sampling techniques to acquire the right types of yarn for the study. The yarns sampled for the study were both from the natural and man-made sources. These yarns (Table 1) were chosen because of their respective inherent characteristics that make them suitable for upholstery fabrics .e.g. tensile strength, drape, hand, absorbency, among others.

Moreover, upholstery merchandisers, furniture producers and fabric structure analysts were also part of the population considered under this study. These groups of people were considered because they sell, know or utilise upholstery materials.

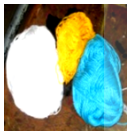
3.4 Sampling

A sample is simply a subset of the population. The concept of sample arises from the inability of the researchers to test all the individuals in a given population. The sample must be a fair representative of the population from which it was drawn and it must have good size to warrant statistical analysis (Castillo, 2009).

Among the various sampling techniques, purposive sampling was employed by the researcher for the study. Leedy and Ormrod (2002) explain that, in purposive sampling, people or other units are chosen to suit the purpose of the study. Certain elements of the study are deliberately on the judgement of the researcher.

Purposive sampling technique was used because of the researcher's judgement on the unique physical and inherent characteristics of the chosen yarn samples in the target population. Table 1 shows the various categories of yarns sampled out for the study.

Table 1: A Table Showing Sampled Yarns

Natural Yarns Sampled	
	**A.** This is a fancy yarn identified slub yarn. It is made of cotton. This yarn was chosen because of its unique twist.
	**B.** This yarn is another fancy yarn. Its sampling was based on it counts. It is identified as a natural yarn.
	**C.** It bares the trade name woolen yarns. The name of the yarn suggests its origin and has the feel of wool when identified. It has a supple feel and hand.
	**D.** The name of this type of yarn is known as metallic yarns. They are from the asbestos family from the natural origin of fibres. As their name, they add reflective effect to the cloth when used.
Man-made Yarn(s) Sampled	
	**E.** The yarns are known to be normal spun yarns. It is made from polyester and it was chosen and mostly used for binding the design weaves because of its tensile strength.

Source: Market survey (2011)

In employing these sampled yarns, their respective tensile strengths were tested by breaking test with the hand to identify their suitability as either warp yarns or weft yarns. The sampled yarns utilized for warping are the polyester normal spun yarns and the natural cotton "fancy yarn B". In addition, it is explained that, there are

three basic types of fabrics: natural, synthetic and blends. All three have their advantages and disadvantages, but generally blending natural and synthetic will give you the best of both worlds (Choosing Upholstery Fabrics, 2008). The sampled warp yarns were used together with the slub, woollen and metallic yarns as weft yarns during the exploration. However, it must be noted that, the sampling of these yarns was not based on their method of production but on the sources of their fibres.

3.5 Data Collection Instruments

Data collection instruments also known as research tools or devices are means through which the researcher gathers his or her data. In this project, observations and interviews were the tools used to gather data for the study. Observations were used during the explorations of the samples and in the field research whilst interviews were conducted for the respective groups in the upholstery market.

The data collected through observations in the studio and interviews from the field of study were used for the presentation and discussion of findings in Chapter 5 where the aesthetic and functional values of the woven samples were descriptively discussed with conclusions drawn and recommendations made.

3.6 Data Collection Procedure

In the process of collecting data for the study, interview guides and observational checklists (Appendixes 1, 2, 3, and 4) were prepared to assist the researcher to obtain reliable information from upholstery merchandisers, furniture producers and fabric structure experts. The questions were devised according to the research objectives and to identify the level of knowledge of these upholstery fabric users.

The interviews and observational checklists were composed of both open and close ended questions. Close ended questions were made to assist participants to choose from a list of possible answers. Open-ended questions, on the other hand allowed participants to express their reasons and understanding according to their level of knowledge.

The interviews were done face to face, which helped the researcher to observe whether or not respondents understand and know more about the field of study. Similar questions were asked but in different ways in order to verify the information given by the respondents and therefore assured validity and coherence of data.

The observations gave an opportunity to the researcher to have a direct contact with the woven fabrics produced and the upholstery fabrics on the market. The researcher had the chance to feel and compare the various types of upholstery materials and to gather various samples for the study.

CHAPTER FOUR

PRODUCING UPHOLSTERY FABRIC DESIGNS ON THE BROADLOOM

4.0 Overview

The possibilities of creating innovative upholstery fabric designs using the broadloom are explained in this chapter. The chapter further outlines the systematic working procedures the researcher went through in executing the woven sample pieces. These fabric samples were explored basically through the techniques of shuttle and hand picking.

It must be noted that, in weaving, the number of shafts on a particular loom determines the complexity of weave structures that can be produced. In relation, the higher the number of shafts, the more complex the weave structures produced. This relationship is applicable to all shaft looms.

The broadloom employed for this project has four shafts which explain the limitations of weave structures it can produce in relation to eight-shaft broadloom, dobby and jacquard looms. The four-shaft broadloom was chosen for this project because the researcher sought to explore the possibility of creating complex weave structures that may appear impossible on this type of loom.

4.1 Loom and Loom Accessories Used in the Project

In producing any practical art work, the artist needs to identify suitable tools, materials and equipment needed for the execution of the work.

4.1.1 Tools

The study basically employed weaving accessories and these are identified and described in the following sections of the write up.

4.1.1.1 Reed

A comb-like device on a loom that separates the warp yarns and also beats each succeeding filling thread into the fell of the fabric. The reed usually consists of a top and bottom rib of wood into which metal strips or wires are set. The spaces between two adjacent wires are called dents (or splits) and the warp is drawn through these dents. The fineness of the reed is calculated by the number of dents per inch. The reed used in the project is 18 inch reed which has less density compared to 24, 30 and 36 inch reeds respectively. In relation to this, the higher a reed number per inch, the finer the reed. The warp yarns were passed through the dents of the reed which explains denting and again defines the width of the cloth. This reed size was chosen because of the various types of yarn sizes used for the project especially the thick and robust types.

Plate 4.1: 18 inch Reed

4.1.1.2 Reed Hook

A flat metallic piece used for passing the warp ends through the dents of the reed. It has a hook at one side and sometimes comes with two hooks at both ends as shown in Plate 4.2. The hook of the reed was used to draw the warp yarns through the dents of the reed.

Plate 4.2: Reed Hook

4.1.1.3 Heddling Hook

A thin rod with a hook and wooden handle employed for passing the warp yarns through the eyes or centre loops of the healds or heddles. The heddling hook was used in drawing the warp yarns through the healds eye held on the shafts.

Plate 4.3: Heddling Hook

4.1.1.4 Shuttle

A boat-shaped device usually made of wood with a metal tip that carries filling yarns through the shed in the weaving process. It is the most common weft-insertion device. The shuttle holds a quill or pirn, on which the filling yarn is wound. It is equipped with an eyelet at one end to control the rate of releasing the filling.

The shuttle was used in holding the polyester and natural fancy weft yarns during weaving for binding. The hand was also used in picking some of the designs like akyem, mmpuakron among others.

Plate 4.4: Shuttles

4.1.1.5 Bobbin

In textile production, a cylindrical or slightly tapered wood, cardboard or plastic core on which yarns are wound for operations such as weaving and dyeing among others is referred to as a bobbin. It has a hole in the centre so that it will fit on a spindle, skewer, shaft or other holding devices like the shuttle.

The researcher used plastic bobbins for the fancy yarns and bamboo bobbins for the polyester yarns and metallic yarns during the weaving process. These two types of bobbin were used because of the different types of yarn used for the samples. For example, the polyester yarns were falling off the plastic bobbins but could stay on the bamboo bobbins.

Plate 4.5: Bobbins

4.1.1.6 Bobbin Winder

It is a wooden or metallic frame used for winding yarns onto bobbins. It has a wheel with handle against a rod which is used for holding bobbins during winding of weft yarns. This accessory was used for winding the weft yarns on cone packages onto the bobbins.

Plate 4.6: Bobbin Winder

4.1.1.7 Raddle

This is a device used for spreading out warp yarns evenly and aligns the ends parallel to each other as they are wound onto the warp beam. It is wooden and comb-like in structure with dents but has wider dents per inch as compared to the reed.

Even though raddle has sizes, the actual raddle size for this project was 2 dents per inch raddle. This raddle size was used because of the different yarns that were used for the project. The raddling was done 18 ends per dent which gave 36 ends per 2 dents which is equal to an inch, so the raddle used for the project can be referred to as 2 dents per inch raddle.

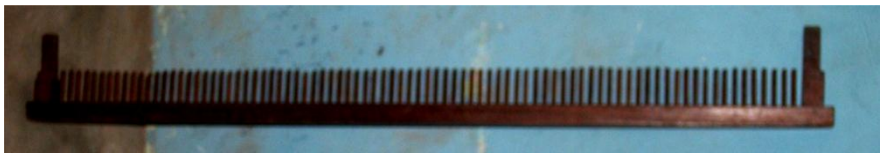


Plate 4.7: 2 Dents per inch Raddle

4.1.1.8 Drag Box

A wooden box loaded with weight that is used for stretching the warp yarns under tension during the beaming process.

Plate 4.8: Drag Box

4.1.1.9 Warping Mill

A vertical wooden frame used for warping or milling. The warp yarns were wound around this accessory under the guide of a measured length of thread. It has two poles at the top and a pole at the lower part of the mill. The two poles are responsible for making crosses whilst the single pole is for holding the tail end of the yarns under tension.

Plate 4.9: Warping Mill

4.1.2 Materials Used

The materials used in the project are mainly yarns. Different types of yarn were chosen for the project which included fancy yarns with different physical appearances, counts and twists. These yarns were chosen because of their uniqueness in texture, tensile strengths among others from the normal spun yarns or the conventional spun yarns. Moreover, they also add some textural effect as far as aesthetical value is concerned. The materials for the project are depicted in Plates 4.10 – 4.14.

Plate 4.10: Normal Spun Yarns

Plate 4.11: Slub Yarns (Fancy Yarn)

Plate 4.12: Fancy Yarns

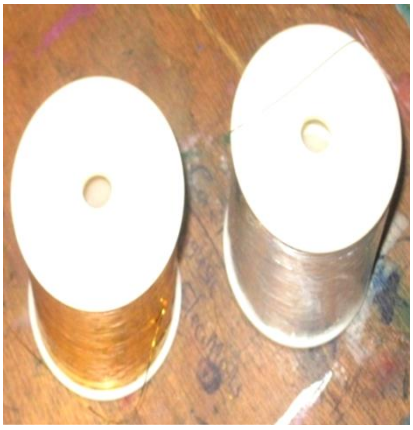


Plate 4.13: Metallic Yarns

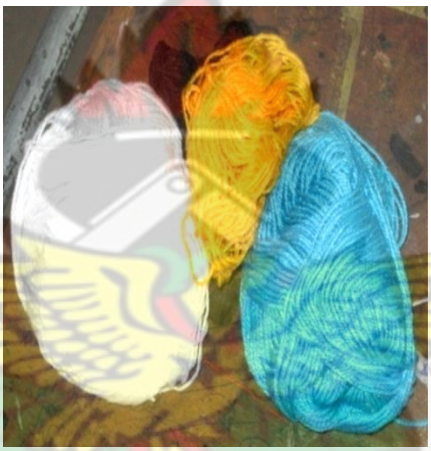


Plate 4.14: Woollen Yarns

4.1.3 Equipment

The equipment used for the project is the loom. A loom is a machine or device for weaving thread or yarn into textile fabrics. Looms range from very small manually operated to large automatic mechanical power types.

In practice, the basic purpose of any loom is to hold the warp threads under relative tension to facilitate the interlacing of the weft threads in fabric formation. The precise shape of the loom and its function may vary, but the basic mechanisms of shedding, picking and beat-up remain the same.

The broadloom is the major equipment employed for this project. Broadloom weaving may be described basically as weaving done on a wider or broader width. This equipment can weave fabric widths between 30-40 inches (thus the name broad loom) in relation to smaller width looms like the table and traditional looms.

Some Broadlooms have maximum of eight shafts but the type used for the project possesses four shafts. There are six treadles, out of which two are allocated for plain weave tie-up and the remaining four are for design weaves. At the back of the loom is the warp beam and beneath its front is the cloth beam. There is a vertical connection that is responsible for shed creation which starts at the top with the pulleys, horses, shafts, lams and treadles.

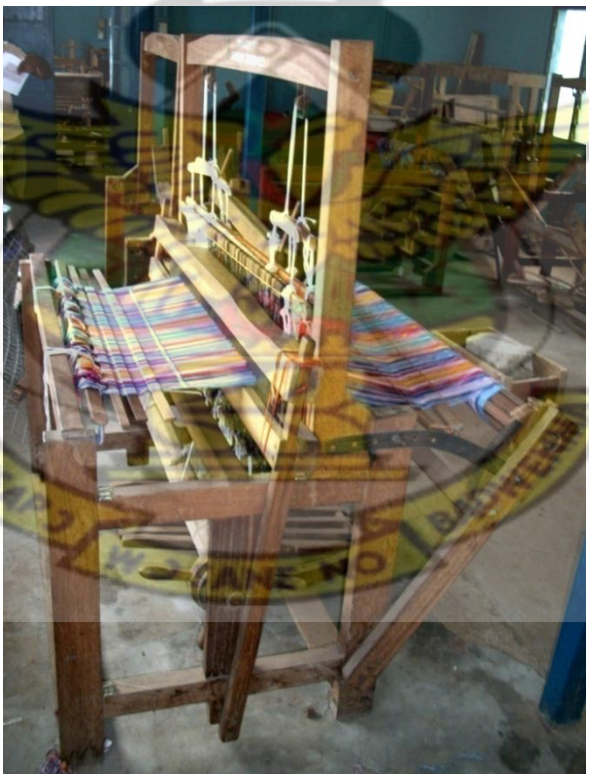


Plate 4.15: Broadloom

4.2 The Preparation Processes in Broadloom Weaving

The construction of a fabric involves two sets of threads namely the warp which runs lengthwise in the fabric and the weft which interlace the warp threads in the crosswise direction in the constructed fabric. In order to weave a fabric successfully, these sets of yarn need to be transformed from their original packages to their practical orientation and these transformations comprise the preparation processes.

4.2.1 Warp Preparation Processes

The warp yarns run in the lengthwise direction in a woven fabric. These set of yarns are subjected to relative tension that assists in creating a shed during the process of weaving. The various processes these yarns go through before weaving are quite numerous. Because of the stresses and tensions of the warping processes, yarns chosen for warp must have enough strength to withstand the various tensions and stresses they will be subjected to during the actual weaving process.

The warp yarns are prepared through the following processes and in the order outlined below.

- Warp calculation
- Milling/Warping
- Raddling and Beaming
- Heddling
- Reeding/Denting
- Tie-up/Gaiting

4.2.1.1 Warp Calculation

The metric system of calculation could not be used in this project because the number of the reed size is in inches which needs to be converted to the metric system in centimetres but for convenience in calculating, the inches was maintained.

In order to ascertain the required width of the fabric, the total number of ends is calculated. The reed size is multiplied by the predetermined width of the fabric to be woven to obtain the number of ends required for the fabric. The ends for the selvedges are also added to the total ends. In this project, 2 inches was added as selvedges which increased the width and again checked width shrinkage. This is mathematically represented below:

No. of ends = (width of fabric x reed size) + (2 x Selvedges)

= (15 inches x 18 inch reed) + (2 x 18 ends)

= 270 ends + 36 ends

= 306 ends

The above theoretical calculation was altered practically because, in principles, the number of ends within an inch of the fabric should be 18 ends. This is correct but will affect the compactness and the relative weight of the woven fabric. In order to solve this problem, some of the ends were doubled which increased the number of ends of the fabric. For instance, the normal spun yarns that were very fine and thin could make certain parts of the fabric very light in relation to the fancy yarns that were thick and robust. This effect was achieved by doubling the normal spun yarns and different colour yarns were combined for aesthetical purposes. By addition of yarns, the number of ends for the fabric increased the total number of ends.

After ascertaining the total number of ends, the colour pattern in the warp was deduced by evenly distributing the yarns among the total ends according to their

colour and thicknesses in the warp pattern. The ends of the individual colours in the warp were used for the warping process. It must be noted that, designing the warp pattern is part of warp preparation and in designing; the principles of design should be followed. The combinations of colours to achieve harmony, balance and rhythm should be considered. The colour arrangement of the number of yarns per each, colour in a repeat and the order of warp colour plan is shown in Plate 4.16.

Order of warp colours (Unit repeat)

Black – 6 ends

White – 6 ends

Black – 6 ends

Blue – 12 ends

White – 6 ends

Yellow – 6 ends

White – 6 ends

Blue – 12 ends

60 ends

The number of ends within a repeat is 60 ends. The order of colours was repeated successively during warping. The unit colour pattern was repeated 6 times to gain the required width of the fabric. It must be noted that, an excess of 54 ends has occurred and this resulted from doubling the polyester yarns because they were thinner in relation to the others yarns used for the warp.

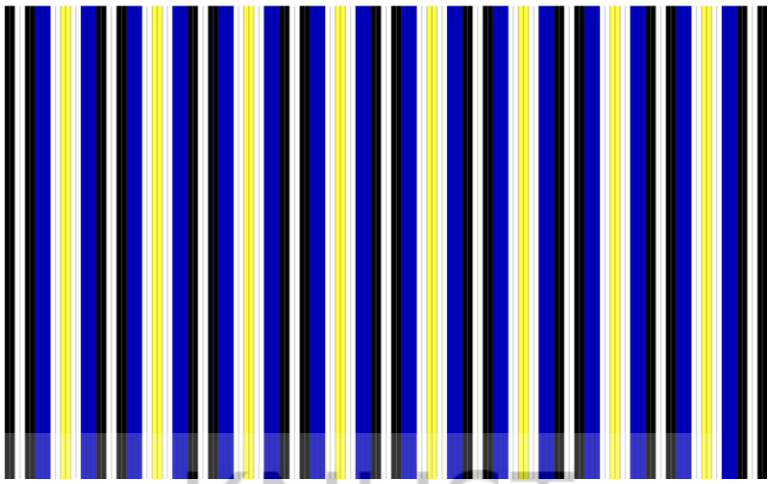


Plate 4.16: Warp Colour Pattern of the Fabric

4.2.1.2 Warping

Warping is the process of winding the warp threads around the warper in a rope form. This is done with a predetermined length with the calculated number of total ends which determines the width of the fabric to be woven. The colours in the warp are successively milled to obtain the right order and size of colouring. The crosses responsible for shedding are also created during the process. The milling process and created crosses are shown in Plates 4.17 and 4.18 respectively.

Plate 4.17: Milling Process

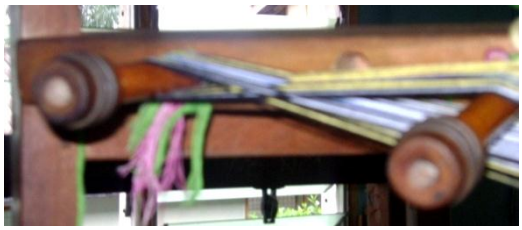


Plate 4.18: The Crosses

4.2.1.3 Raddling and Beaming

After the milling process, the crosses were secured by tying the upper and lower sections of the warp ends with a different colour of yarn. The warp threads in rope form are converted into chain form as it is being removed from the mill. The chain form enabled the long rope of threads to be secured, shortened, and made them free from dirt. Furthermore, it made the yarns manageable for the raddling process.

Plate 4.19: Warp Yarn Converted into Chain Form

Shed sticks are used to secure the tied crosses from the mill. The warp is then uniformly spread-out on a raddle according to the reed size or number. For this project, the raddling was 18 ends per each raddle dent. The raddling process may vary for each woven fabric depending on the reed size used for the fabric. For example, if a 30 inch reed is used, the counting order will be 16 and 14 ends respectively and this explains the even distribution of raddling. The yarns were crossed during warping because the yarns move in pairs; one stays up and the other goes down to create a shed. Furthermore, there are no odd numbers when it comes to the warping process.

After raddling, the raddle was covered with its cap to secure the counted ends in their respective dents. The shed sticks found behind the raddle were used to push the crosses further away to the other side of the warp held to the drag box. This was

done by gently pushing the crosses with the shed sticks through the raddle dents further away to the other side of the warp. After this action, the crosses were found behind the heddles after beaming and again, assisted the weaver to easily trace any broken yarn during weaving.

Beaming follows immediately after raddling. The warp ends were stretched under tension by tying it to the drag box. The warp ends were then wound onto the warp beam. As the warp yarns were being wound onto the warp beam, beaming sticks were inserted at intervals to separate the warp layers from one another. This activity prevented the yarns from entanglement and again, assisted the operation of warp let-off during weaving. The raddled and beamed warp is shown in Plate 4.20 and 4.21 respectively.

Plate 4.20: Warp Yarns Raddled and Subjected to Tension

Plate 4.21: Beamed warp

4.2.1.4 Heddling

Heddling can be described as the main frame of the weave structure. It determines the order and movement of the upper and lower warp sheets which results in the creation of a shed. This process is also known as drafting. The warp ends were individually passed through the heald's eye on the various shafts according to a certain order known as the heddling order. A heddling hook was used for this process.

With reference to Figure 1, the order is 4321 which means the first end was passed through the first heald's eye on shaft 4. The next end was also passed through the first heald's eye on shaft three. It must be noted that, these numerical orders represented the shafts on the loom. In relation, all ends that had the same number were heddled on the successive heddle's eye on the same shaft.

The heddling order for this project was in three different sections. The section one entails a Fancy Twill order, section two entails Tapestry order and the final section entails a Simple Twill order. It must be noted that, as a result of combining these various heddling orders, a plain weave order is automatically generated. It simply means, in weaving a plain weave two shafts are needed but twill weaves make use of at least four shafts or more. Therefore it is possible to weave a plain weave out of twill weave because of the number of shafts used. Figures 1, 2 and 3 show the different heddling orders in unit repeats and their numerical representations.

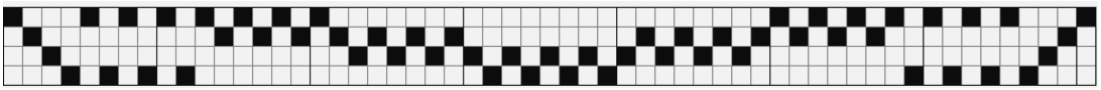


Figure 1: Section One (Fancy Twill Order)

/4321/ 4141414/ 3434343/ 2323232/ 1212121/ 2323232/ 3434343/ 4141414/ 1234/

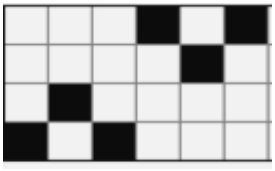


Figure 2: Section Two (Tapestry Order)

/121/ 434/

Figure 3: Section Three (Simple Twill Order)

/1234/141/ 434/ 141/ 4321/ 4321234/1234/

In the process of heddling, the warp ends were divided into five parts. The first division was for the fancy twill order, followed by the tapestry order with the simple twill order placed in the middle of the fabric. The tapestry order and fancy twill order were repeated to balance the weaves in the fabric.

4.2.1.5 Reeding

The completion of the reeding process determines the width of the fabric. The reed size used is 18 inches which indicates that for every inch measured on the reed, there are 18 dents and therefore 18 ends. The individual warp ends were passed through the dents of the reed. The ends for the selvedges were plied to strengthen the edges of the fabric. The Reed hook was used to draw the ends through the dents of the reed.

4.2.1.6 Tie-up/ Gaiting

This process is identified in two stages. The first process explains tying the ends to the apron stick of the cloth beam. The ends are taken in reasonable quantities and knotted around the apron stick. The ends are pulled to straighten any sagging yarns and the final tension expected in the warp is imparted during the tying process.

The second process defines connecting the shafts through the lams to their respective treadles. This tie-up describes the connection between the four shafts and six treadles responsible for shed creation. It must be noted that, the tie-up arrangement can be changed depending on every fabric's stepping order. The tie-up is shown in Figure 4.

Figure 4: Tie-up Arrangement

Design weave tie-up

Shaft 1 & 2 = Treadle A

Shaft 2 & 3 = Treadle B

Shaft 3 & 4 = Treadle C

Shaft 4 & 1 = Treadle D

Binder / Plain weave tie –up

Shaft 1 & 3 = Treadle E

Shaft 2 & 4 = Treadle F

In Figure 4, the horizontal bars represent the shafts in numerical order whereas the vertical bars indicate the treadles. The tie-up indicates that, whenever a treadle is depressed, the connecting shafts move down and the remaining shafts stay up. For instance if treadle A is depressed, shafts 1 and 2 will go down leaving shafts 3 & 4 to stay up to create the shed for the design. This explains the rest of the tie-up arrangement.

The treadles responsible for the tapestry effect are Treadles A and Treadle C. Treadles A – D are the design treadles whereas treadles E and F served as the binder or the plain weave treadles.

4.2.2 Weft Preparation

The weft yarns interlace the warp threads at a perpendicular angle to form a fabric. These yarns are carried within the shuttle during the weaving process. In relation to the warp yarns, the weft yarns can be of a lower tenacity since this set of yarn is not subjected to much tension.

The bobbin winder was used for winding the threads onto the bobbins which are then slotted into the shuttle. A substantial amount of tension is needed when winding the weft onto the bobbins since the absence of this will cause sloughing- off during shuttle traversing.

After the treadles tie-up and tying-up the warp ends to the cloth beam, a test weave was done to identify the possibility of weave faults. The resultant test weave is shown in Plate 4.22.

Plate 4.22: Test Weave

4.3 Producing Sample Weave Structures on the Broadloom

The methods used in creating these weaves were ascertained by the heddling order and the stepping order. The tie-up arrangements outlined in Figure 4 are responsible for the outcome of the weave structures. In addition, the aesthetic effects produced are as a result of the different yarn types and hand picking.

The production of the different weave structures to create innovative woven upholstery fabric designs are discussed in the subsequent sections of the report.

4.3.1 Woven Sample One (1)

Before the commencement of the actual weaving process, a plain weave design which serves as border design was produced by stepping on treadles E and F alternatively. The border design consists of one inch each of white polyester thread sandwiched by half an inch of yellow polyester thread.

The design sample combines tapestry technique and a plain weave check effect. The tapestry design was created by alternating treadles A and C to create the

required sheds for picking the weave at the demarcated areas of the fabric. A plain weave which served as a binder was used successively to create an additional effect at the background of the tapestry designs. The treadles responsible for binding are treadles E and F. The tapestry design is traditionally known as akyem design. The resultant woven design is shown in Plate 4.23.

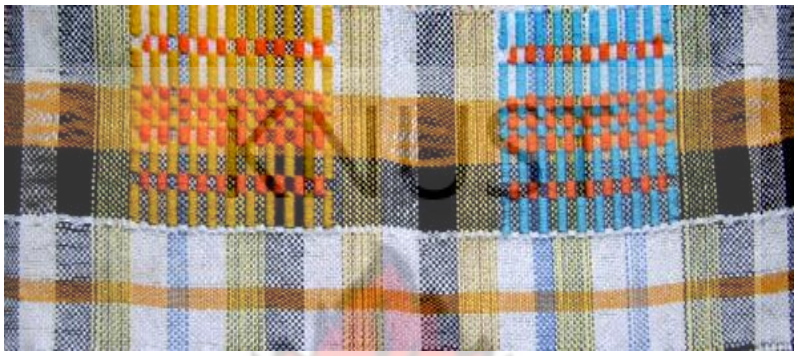


Plate 4.23: Woven Sample One

Woollen yarns were used to pick the akyem design at selected areas of the fabric. However, the plain weave at the background was done with polyester yarns. The colours employed in this design were yellow, orange and turquoise blue for the akyem and yellow and black for the plain check background.

4.3.2 Woven sample two (2)

This design is a twill weave. The design treadles were used in creating the design according to the predetermined stepping order below. Again, a binder was used in securing the twill weave since certain treadles were stepped repeatedly a number of times. The stepping order of the various designs is represented in numerical order which corresponds to their respective treadles.

The stepping order and effect of the design is shown in Plate 4.24.

Stepping Order:

/4321/ 4321 (4x each)/ 4321/ 4321234 (4x each)/ 1234/ 1234 (4x each)/ 1234/ 121/ 434/ 121/

Plate 4.24: Woven Sample Two

This design was constructed with a woollen yellow yarn for the twill weave and a black polyester yarn was utilised for the plain weave which served as the binder.

4.3.3 Woven Sample Three (3)

This design entails a tapestry effect. It comprises a babadua design with an akyem design incorporated into it. The designated treadles were used in creating the woven design. This design weave starts with babadua using woollen black, yellow and turquoise blue yarns alternating each other in varying thicknesses. The middle design is an akyem design with orange, turquoise blue and black woollen yarns. The akyem design also displays different lengths of weft colours. The design weave can be identified as a warp-faced effect.

Plate 4.25: Woven Sample Three

4.3.4 Woven Sample Four (4)

A plain weave was used in this design. It depicts a colour and weave effect. Two different sizes of yarns were used in creating this effect. A coarse yarn count and a fine yarn count with their respective colour combinations of turquoise blue fancy yarn and yellow polyester yarn. A black polyester yarn and cream fancy yarn check was also rendered with the same effect.

Plate 4.26: Woven Sample Four

4.3.5 Woven Sample Five (5)

A fancy yarn known as slub yarn was used for this twill weave. The stepping order below was employed and a binder was again used to achieve this design weave. The texture of this weave is of its own individuality by sight and touch. The stepping order and the weave are shown in Plate 4.27.

Stepping Order: /1234 (2x each)/ 434 (4x each)/ 121 (2x each)/ 4321 (2x each)/ 4321234 (4x each)/

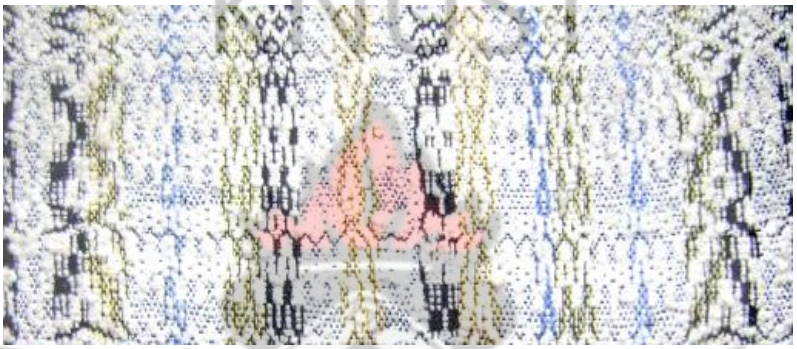


Plate 4.27: Woven Sample Five

4.3.6 Woven Sample Six (6)

Woven design six was created out of plain weave, tapestry and a weft insertion technique. The plain weave was employed to give the colour and weave effect whilst a broom stick was inserted in-between the plain weave to create the warp floats in the design. The tapestry design known as mpoakron was used in-between the plain weft inserts. The design is in Plate 4.28.

Plate 4.28: Woven Sample Six

4.3.7 Woven Sample Seven (7)

In this design, complex twill, simple twill and an akyem design were employed. These weave structures were alternated to obtain the design. Metallic yarn was used together with a cream fancy yarn for the lustrous effect in the design. The stepping orders for the twill weaves together with the design weave are as follows.

Fancy Twill Stepping Order: /121/ 232/ 343/ 414/ 343/ 232/ 121/

Simple Twill Stepping Order: /1234/1234/ 1234321/ 4321/ 4321/

Plate 4.29: Woven Sample Seven

4.3.8 Woven Sample Eight (8)

This design is in two parts. A plain weave effect and complex twill; and a tapestry design and a plain weave check effect. The stepping order of the first design sample 8a is as follows;

/1234/ 1234/ 434 (4x each)/ 4321/ 4321

The twill weave stepping order with plain weave serving as a binder produced the weave design in Plate 4.30. A yellow woollen yarn was employed for the twill weave whilst the slub yarn served as the binder.

Plate 4.30: Woven Sample 8a

The second design is a combination of tapestry and a plain weave check. Two different tapestry weaves were woven together i.e., the akyem and diamond designs. The diamond is picked in cream woollen yarn with black and turquoise blue woollen yarns centred in it. Yellow and black polyester yarns serving as the binder was alternatively utilised to achieve a check background for the design. This resulted in the woven design in Plate 4.31.

Plate 4.31: Woven Sample 8b

4.3.9 Woven Sample Nine (9)

This weave design has its unique effects in weave and colour illusion. This is a tapestry design where the colours are woven into one another. The design colours are turquoise blue, yellow and black woollen yarns. A black polyester yarn binder was employed after every pick and Plate 4.32 shows the resultant design.

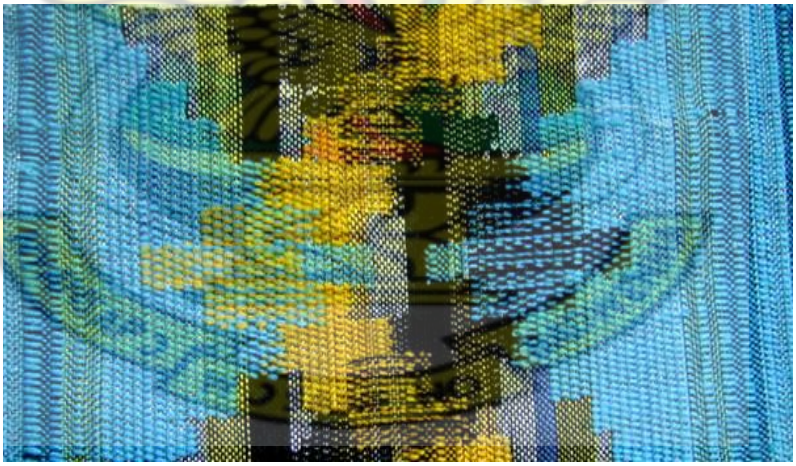


Plate 4.32: Woven Sample Nine

4.3.10 Woven Sample Ten (10)

The woven design produced is a plain weave effect. Weave and colour effect was employed to achieve this design. The design is a derivative of woven sample four

in Plate 4.26. The difference is identified in their appearance as this sample looks more of warp stripe effect whereas sample four shows a check effect. The sample is in Plate 4.33.

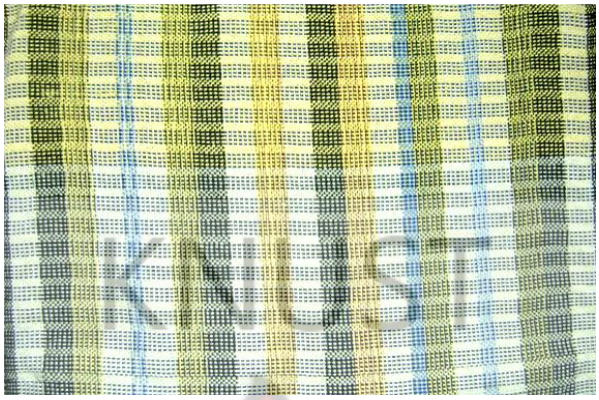


Plate 4.33: Woven Sample Ten

These samples were created on a four-shaft broadloom. The weaves used for the samples have their strengths and weaknesses as fabric structures. During production, some of the weaves were used individually within a sample, whereas two or more weaves were combined in other samples to complement each other. This is in line with Soller (2004) who states that, each weave type has its advantages and disadvantages in tenacity depending on the order of interlacing.

The idea of introducing tapestry effects was also considered. Traditional Kente motifs such as akyem, babadua, diamond and mmpuoakron were also used to enhance the samples and to add traditional taste to the fabric.

The quality of a fabric depends mostly on the type of yarn and weave used in its construction. Dixon (2008) explains that, fabrics can be grouped into categories according to their weave or surface design. The durability of the weave depends on the strength of the yarns and closeness of the weave. To some extent, these factors determine the end use of the fabric produced.

The functional and aesthetic aspects of the samples were considered during production. Much can be said about the aesthetic effects of the textures and weave patterns but less can be identified about different colour ways. The functional aspect of the samples cannot be attested since there were no tests on the mechanical properties of the samples. However, these samples as upholstery fabric designs becomes fulfilling because the use of any upholstery fabric depends on the kind and rate of exposure of the furniture. In reference of Grovenor (2010), different fabrics used as upholstery give varying results; they can be soft and luxurious, or coarse and hardwearing. It all depends on the primary function of the piece of upholstery, where it will be situated and the amount and rate of exposure.

There was a great challenge in acquiring yarns for the project but a few fancy yarns were gathered for the production of the samples. Novelty weaves however, are created by using a variation or a combination of the basic weaves (Upholstery Basics, 2009). Even though there were challenges in producing the samples with reference to types of yarn and colour, there is creativity and innovation in the woven samples produced.

CHAPTER FIVE

PRESENTATION AND DISCUSSION OF RESULTS

5.0 Overview

This chapter presents and appreciates the results of woven samples produced as well as the philosophical concept or artist statement behind the study. In addition, it outlines and discusses field research results that were obtained during the study.

5.1 Discussion of Woven Samples

The significant aspects taken into account when choosing an upholstery fabric are the aesthetical and functional qualities of the fabric. These factors were thoroughly considered by the researcher in producing the samples. The study unearths the creativity and production of hand-weaving skills in upholstery fabric designs.

The discussion outlines the details of the woven samples as well as their respective construction techniques and their suitability as upholstery fabric designs for furniture.

5.1.1 Woven Sample One (1)

Plate 5.1: Woven Sample One

The combination of akyem design and plain weave was employed in developing this design. The aesthetical appearance of upholstery fabric is considered,

however, the functional aspect of the fabric is of prior importance. Considering the basic weaves, the plain weave is considered to be the strongest and most durable. Mabey (2010) affirms that, plain weave is very strong, versatile and appropriate for many different fibres and blends of fibres. The akyem design was introduced to add beauty and a taste of tradition to the sample. The plain weave was used as a binder to make the sample compact to suit its functional purposes and aesthetically enhance the fabric because of the plain weave check effect in the background. This sample as an upholstery fabric will be suitable for offices and conference rooms because of less traffic on the material.

5.1.2 Woven Sample Two (2)

Plate 5.2: Woven Sample Two

The design exhibits three different twill effects. According to Elgier (2008), twill weave is somewhat similar to plain weave. Twill weave is durable, heavier, wrinkle and soil resistant, and is more flexible than plain weave. The twill effects at the selvedges of the cloth is different from the adjacent twill effects whilst the mid-twill is also showing its own effect. Again, the background of these effects is bound with black plain weave to secure the twill weaves. The twill weave is considered as the strongest weave after the plain weave and the combination of these two weaves will make this sample suitable for furniture with regular usage.

5.1.3 Woven Sample Three (3)

Plate 5.3: Woven Sample Three

This woven sample has traditional aesthetic effect. It is attested that, fabric designs play an important part in making the fabric more beautiful and more fashionable. It reflects the craftsmanship as well as the customs or culture of the wearer (Fabric Design, 2007). The novelty is using traditional concept in contemporary upholstery fabric designs. The border of the sample is babadua with black, yellow and turquoise blue colour effects. Turquoise blue, orange and black colours were also combined for akyem effect to give a rich Kente identity. However, the durability of the weave is secured with a plain weave serving as the binder. The structural strength identified with this sample makes it suitable for furniture used in public offices and traditional settings.

5.1.4 Woven Sample Four (4)

Plate 5.4: Woven Sample Four

The concept of colour and weave effect was employed in producing this woven sample. The novelty in this sample is the textural effect achieved as a result of using different yarn counts in plain weave. The distribution of colour in the sample makes it physically appealing. With reference to its functional purpose, it is highly recommended for every furniture because of the structural properties such as durability and tenacity of the sample, as attested to by Dixon (2008), plain weave is the strongest of the weaves and their durability depends on the strength of the yarns and closeness of the weave. This sample as an upholstery fabric is suitable for offices and conference rooms.

5.1.5 Woven sample Five (5)

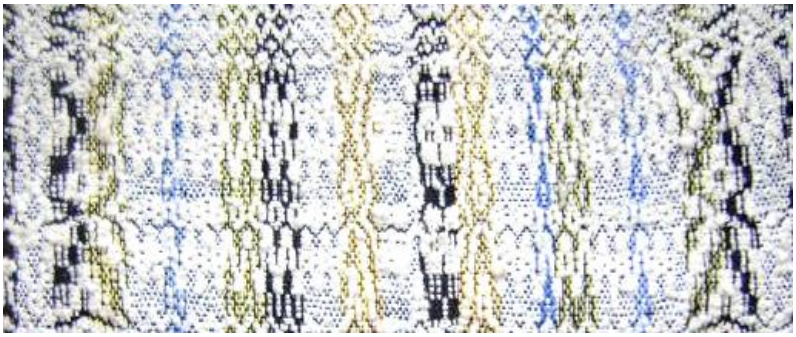


Plate 5.5: Woven Sample Five

The use of slub fancy yarn gave the sample a unique textural appeal. The weave is a derivative of woven sample two in plate 5.2, with plain weave as a binder. Its suitability as upholstery fabric is relative because in choosing upholstery fabrics, the rate and kind of exposure of the furniture needs to be considered. Tremblay and Williams (2010) explain that, some upholstery fabrics are better suited to specific areas. Furniture in high use areas (family rooms and kitchens) must be durable and easy to maintain. Elegant textiles with complex textures may be more suitable for low traffic areas such as formal living rooms. In agreement with this statement, this sample is suitable for less exposed areas like offices and formal living rooms.

5.1.6 Woven Sample Six (6)

Plate 5.6: Woven Sample Six

Hand-picking, shuttle throwing and weft inserts were employed in this design. The use of weft inserts and hand-picking of a Kente motif called mpoakron was explored in creating this sample. In considering the functional aspect of this fabric, it is recommended that, the fabric is given a backing to strengthen it if the fabric is considered for highly exposed furniture. It was identified that, a latex finish is sometimes applied to the back of loosely woven or pile fabrics to keep the grain line

from shifting or to hold the pile in place (Upholstery Basics, 2009). The beauty of this design may be of interest to consumers with unique tastes in textural appeal.

5.1.7 Woven Sample Seven (7)

Plate 5.7: Woven Sample Seven

The concept of simple and complex twill weaves used in between akyem design is employed in this sample. The complex twill is alternated with the simple twill showing orange and cream colours respectively. The akyem design is picked in cream colour together with silver metallic yarn which adds a reflective effect to the sample. This effect is obvious in the areas where cream colour is prominent in the sample. Again, plain weave was used to make the sample durable. This sample is suitable for offices and family houses.

5.1.8 Woven Sample Eight (8)

Plate 5.8: Woven Sample 8a

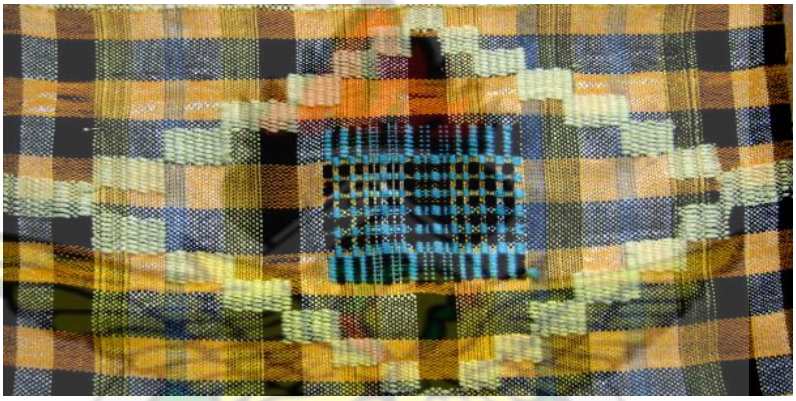


Plate 5.9: Woven Sample 8b

These samples can be considered as a unit however, they can be separated from each other because of design individuality or as a unit. The first segment of the sample (8a) comprises of a woollen yellow and a white slub fancy yarn employed in a plain weave and colour effect. Interestingly, the slub fancy yarn served as a binder whilst the woollen yarn was used in picking the twill weave. It is recommended for individuals who have preference for textural fabrics and low traffic furniture.

Considering sample (8b), a diamond design was picked in cream colour with black and yellow plain weave check serving as the background of the design. There is black and turquoise blue akyem effect placed in the middle of the diamond design. This design will be suitable for furniture used in palaces and other traditional settings.

The combination of these samples may give a unique aesthetical appearance to furniture.

5.1.9 Woven Sample Nine (9)

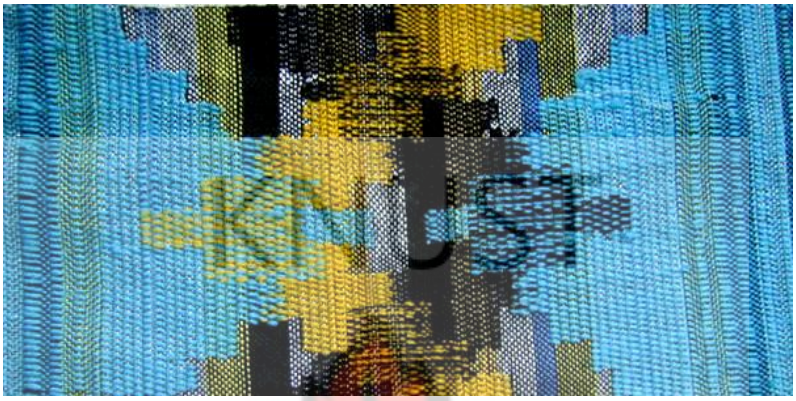


Plate 5.10: Woven Sample Nine

The interesting effect of one colour blending into one another is identified as the innovation in this sample. The colours of turquoise blue, yellow and black were hand-picked together to give the illusion of different diamond effects in the sample. The difficulty of introducing one colour into the other makes this sample very challenging and interesting among the samples produced. The design will not only enhance the furniture in offices and traditional settings again, will make the eye travel around the fabric.

5.1.10 Woven Sample Ten (10)

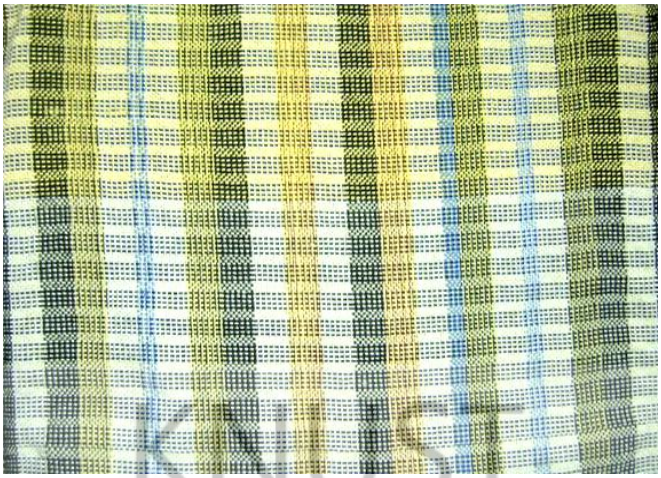


Plate 5.11: Woven Sample Ten

This sample is a derivative of sample four in plate 5.4. In rendering this effect, cream colour was alternated with black in plain weave. This sample however gives more of a striped effect than that of sample four which shows a checked effect because of colour alternation. It can be used as upholstery fabric for furniture in a family house.

5.2 Field Research Findings and Discussions

In order to produce the samples, the upholstery market was observed and upholstery sellers and furniture producers were interviewed to access information on the suitability and qualities of upholstery fabric designs. The researcher employed an observational guide (Appendix 4) and interviewed upholstery merchandisers, furniture producers and fabric structure experts (Appendixes 1, 2 and 3) respectively. The field research findings are discussed in the next section of the report.

5.2.1 Types of Upholstery Material and Their Characteristics on the Local Market

The upholstery materials on the local Ghanaian market are mainly leather and fabrics (Personal Observation, September 2 - 30, 2011). These materials according to their trademarks and labels are imported into the country primarily from China and rarely from UK and USA.

The upholstery materials as identified are machine-made and come in leather and fabrics, specifically woven and non-woven. The dominant weave structures were plain, twill and compound weaves whilst majority of the non-woven upholstery fabrics were produced by the bonding technique.

With reference to the types of fibre used in upholstery fabrics, natural fibres specifically cotton and man-made fibres like nylon and polyester were mostly used in the manufacturing of these upholstery fabrics. According to Elizabeth (2010), cotton is perhaps the most popular natural fabric for upholstery. It is durable and offers good resistance against wear and tear. However, she explains that, pure cotton is probably not the best way to go if the furniture is going to receive a lot of traffic. Cotton blend is a much more sturdy fabric and is suited for everyday use. Blanchard (2007) is of the view that, nylon is strong and abrasive, and mildew resistant. It does not absorb water or other liquids easily and is suitable as upholstery fabric. This explains why cotton blends are mostly used for upholstery fabrics than 100% natural cotton and 100% man-made fibres for upholstery fabrics.

The physical properties of these observed upholstery fabrics were identified as smooth or rough, heavy or light, weak or strong. The non-woven fabrics generally were smooth by texture or handle, light in weight and weak in terms of strength. On the other hand, the woven fabrics were rough, heavy and strong with respect to texture, weight and tenacity.

From all the upholstery shops visited, the researcher could not find any upholstery fabric that was produced by hand weaving technique. It is confirmed that, Jacquard patterns, when carefully analysed, may be seen to contain combinations of plain, twill, and satin weaves, even in the same crosswise yarn (Jacquard, 2011). Even though these machine-woven fabrics look complex and aesthetically appealing, some of these fabrics were woven with basic weaves which can be hand-woven with much creativity and uniqueness in design.

5.2.2 Patronage of Upholstery Materials

The upholstery materials on the local market are all imported. This is evident from the interview responses by some upholstery merchandisers on the local market. Upholstery materials according to the merchandisers are mostly leather and cloths. There was no evidence about locally hand-woven upholstery fabrics but it was made known that, natural leather is rarely used for furniture because of its scarcity (Focus Group Discussion of Upholstery Merchandisers in Manhyia, Oforikrom and Adum, 2011).

The study revealed that, upholstery made of fabrics receives much patronage than that made of leather. Factors like price, quality, durability, care, colour ways among others were the major determinants of the demand for the upholstery materials. Even though leather and fabric have common grades in quality and durability, fabric was identified as having easy care properties, being affordable and has variety in terms of colour ways according to the merchants. It was however, explained that, leather is another popular upholstery fabric. It gives a traditional look to the room, is easy to clean and lasts for a very long time; the one down side to leather is that it is very expensive and vulnerable (Choosing Upholstery Fabrics, 2008).

Most merchandisers could identify the upholstery fabrics by their texture, weight and strength and not by their fabric structures. A few are able to identify the upholstery fabrics as woven but none could identify the non-woven fabrics as such.

Again, identifying the type of fibres used for these upholstery fabrics was another challenge for these merchandisers. They had less to say about the type of fibres except that in their own way, they identify the fibre types by weight and strength. The heavy and strong fabrics were identified as cotton fibres whilst the light and weak fabrics as nylon or polyester fibres.

The names of the upholstery fabrics are not known to them but they sometimes give names to these fabrics by their scarcity, design structures and the thickness of the fabrics. Names like cocaine, dollar-dollar, flower and heavy-duty were some of the common names given by the merchandisers. Some of the fabrics are also named after their respective importer, for example Sadik.

The merchandisers explained that, the patronage and usage of leather and fabrics are determined by furniture producers. According to the importers, fabrics that sell on the market are mostly imported. Again, the fabric designs that do well on the market are plain check fabrics. Fabric design patterns vary from small geometrical patterns to pictorial designs. Sometimes it is also designed with religious figures for religious purposes. Checks, floral, geometric designs, oriental prints, jacquards are some of the common upholstery fabric designs (Fabric Design, 2009). The characteristics of these fabrics are the different counts of yarns employed and the different colour ways of the fabric design. Both plain and twill weaves are available; but it seems the plain woven fabrics receive much patronage.

5.2.3 Usage of Upholstery Fabrics

Furniture producers make most use of upholstery materials. They work directly with customers who sometimes choose the materials for their furniture (Personal Communication, Furniture Producers in Kumasi, 2011).

Furniture producers interviewed confirmed that, fabrics are used more than leather material for furniture. The study revealed that, most consumers request for fabrics because of the kind and rate of exposure of the furniture, the quality and care of the fabric among others. Leather, according to the furniture producers is expensive for furniture and its durability is relative because it does not suit the weather conditions of Ghana. Furthermore, leather materials develop cracks with time; it is delicate for family use and sometimes loses its colour quality. This affirms the fact that, leather requires gentle living as it can be stained, scratched or crack with time (Upholstery Fabric Information, 2009). In addition, it has limited colour ways as compared to upholstery fabrics.

The meaning of fabric structure could not be explained by the furniture producers but a few defined it in context as materials that fray and the ones that do not fray. Even though certain characteristics are generally considered when choosing upholstery fabrics, the furniture producers consider the texture and most importantly the colour of the material. It is explained that, a huge variety of upholstery and decorative fabrics cover rich textures solids, small-patterned coordinates, classical stripes and modern interpretation of classical, generous wide-repeat patterns. The colours should be dark with less bright colours. The colours are sophisticated, ranging from classical red, gold, black, blue and green shades to modern grey and silver tones (New collection, 2007).

Dark colours are much easier to care and hardly expose dirt and stains according to the furniture producers. Ivanova (2010) attests that, colours vary from

deep and rich greens, burgundies, blues and rich neutrals to subtle shades of lighter colours. These colours are easily cared for and hardly expose dirt and stains as upholstery colours. The colours used for the samples are contrary to the colours mentioned and this is because there were limited colours to choose for the samples.

In furniture production, the furniture is produced according to market trends and consumer's tastes and preferences. According to the furniture producers, customers determine the quality of fabric by value and individual taste. To an extent, the furniture style is also chosen by the consumer. Occasionally, producers also invest and choose fabrics that are in high demand for their furniture.

The study further reveals that, furniture producers do not consider the type of fibre used in producing the upholstery fabrics and the design structure. The interest is in what they define as "quality", price and colour variations.

The use of locally made hand-woven fabric for upholstery was not known by these furniture producers and majority of them believe it cannot be produced and doubted the quality of locally hand-woven fabrics.

5.2.4 The Possibility of Locally Hand-Woven Fabrics for Upholstery

Fabric structure experts/analysts were also interviewed to find out more about upholstery fabrics and the possibility of using locally hand-woven fabrics for furniture upholstery.

Upholstery fabric is considered as fabric used for furniture and other upholstered products. It can also be used for drapery (curtains), bedspreads, car interior among others.

Upholstery fabrics, according to Fabric structure experts, can be woven, knitted, non-woven and can also be leather. They are identified as strong, hard-wearing, heavy, piled effect, resistant to abrasion, comfortable just to mention a few.

The experts explained that, even though both leather and fabric are suitable for furniture upholstery, fabric is identified as the most suitable material for furniture upholstery because of its comfort. It was deduced that, leather and fabric are suitable for upholstery but their application depends on the environmental conditions and uses.

Upholstery fabric tightly woven with higher thread count wears better. It does not wiggle or move around. It is often heavy, tough, durable and do not soil or fade (Upholstery fabric, 2010). In accordance to this statement, woven fabrics can be recommended because they are breathable, comfortable, stronger and easy to care.

A deduction made from the review of related literature explains that, plain and twill weaves are the most durable among the basic weaves whereas Jacquard and Dobby weaves are considered highly sophisticated and durable.

The types of yarn employed in the manufacture of upholstery fabrics are highly significant as they determine to the greatest extent the inherent properties of the resultant fabric. Some of the properties of interest include tensile strength, resistance to chemicals, comfort, elongation of the fabric.

The use of hand-woven upholstery fabrics for furniture is not known and people are sceptical about the quality and finishing of hand-woven fabrics for upholstery. However, it was suggested that, if hand-woven upholstery fabrics are made available and receive the right patronage, it will go a long way to build a sustainable local textile industry and improve the economy of the country.

5.3 Assessing the Hand-Woven Samples Through Exhibition

The woven samples were produced based on information obtained through observations and interviews. After production, the woven samples were exhibited openly for criticism and appreciation by upholstery merchandisers, furniture producers, and textile students.

5.3.1 Upholstery Merchandiser's Appreciation

The woven samples were aesthetically appreciated but some selected samples were not suitable for upholstery fabric. The recommended samples are the plain checked effect and twill weaves produced by the researcher in Plates 4.24, 4.26 and 4.33. There was emphasis on smaller motif designs as they enhance the appearance of furniture more than bigger motif designs.

The marketing of upholstery fabrics depends highly on the quality and colour variations of the fabric designs. It was recommended that, colours such as blue, wine, cream, chocolate, blue-black among others are good for upholstery fabrics.

It is understood that, the use of dark colours for upholstery fabric designs has a major influence on the furniture. Again, the weave structure which determines the quality of the fabric needs to be considered when producing upholstery fabrics. Finally, the type of upholstery fabric depends mostly on the rate and kind of exposure given to the furniture

5.3.2 Furniture Producer's Appreciation

Even though the woven samples were recommended, the width of the fabric was suggested to be 58 – 60 inches to suit its application for furniture of various lengths and sizes. For upholstery chair seats: 3/4 yard of 54" wide fabric is enough to

cover 2 standard chair seats. So 3 yards will be enough for 8 chair seats. Each 3/4 yard gives two 27" by 27" pieces of fabric to work with. If the repeat is large or a pattern has to be centred, more fabric will be needed (Estimating-Fabric-Yardage, 2011). The texture of the samples was recommended but the problem was the possibility of mass production. It was explained that, interested individuals can order for selected samples but with reference to mass market, the fabric designs need to be forwarded to the industry for production.

It was also explained that, the use of white and bright colours in manufacturing upholstery fabrics should be minimal and dark colours should dominate the colour orientations of the fabric. Interestingly, it was pointed out that, woven fabrics normally fray if the structure is not compact and uniform. It was suggested that, hand-woven fabrics should be strong and firm during production.

A greater set-back identified was that, even though locally hand-woven fabrics might be good for upholstery, the perception of Ghanaians about local products will hinder patronage. This set-back can only be resolved through education of the Ghanaian public about made-in-Ghana products. Again, local producers are advised to give the best in terms of quality to meet the competition in the market.

5.3.3 Textile Student's Appreciation

The woven samples were described as aesthetically unique. The use of fancy yarns and different yarn counts were seen as bold attempt by the researcher. It was recommended that, these yarns should be used in practical works to create variety in woven fabrics and to expose students to the challenges that come with the use of such yarn types.

These are the general perceptions by upholstery merchandisers, furniture producers and textile students about the woven samples explored for the study. Even though art pieces are perceived by the artist and the public to assess their value, it is believed that the meaning of an art piece gives a greater value to the art piece.

Schneider (1987) attests that, some fabrics meet practical demands while others communicate meanings or express artistic taste. It is observed that, people give value for artworks on aesthetics and functional purposes but the researcher is of the view that, the philosophical meaning and understanding of art piece and practice can also give value to artworks to some extent. The philosophical meaning behind the samples is written in the artist statement.

5.4 Artist Statement

Siber (2004) explains that, an artist's statement is a short written piece accompanying an artwork that describes what one does as an artist. Artist's statements are used to help communicate the artist's ideas, concepts and motivations to the viewer. They are important aspects of an artist's professional life because they are used to promote their work to gallery owners, museum curators, photo editors, art journals and the general public.

Spirkin (2011) also explains that, an indispensable feature of art is its ability to convey information in an evaluative aspect. Art is a combination of man's cognitive and evaluative attitudes to reality recorded in words, colours, plastic forms or melodically arranged sounds. Like philosophy, art also has a profoundly communicative function. Through it, people communicate to one another their feelings, their most intimate and infinitely varied and poignant thoughts.

Another characteristic of studio/practice-based research identified is an original investigation undertaken in order to gain knowledge and understanding. It includes the invention of ideas, images, performances and artefacts including design, where these lead to new or substantially improved insights in the field of practice.

The woven samples produced are based on the artist perception and understanding about hand-weaving in the 21st century. The artist is of the view that, the value given to the meaning of an art work transcends the value relatively given to its aesthetics and functionality. Even though some art works are produced to be useful, this study produces woven samples that satisfy aesthetical and functional purposes and furthermore communicate the relationship between the artist and his work to the public. The statement below tells the concept and motivation of the artist about the hand-woven samples and hand-weaving in general.

Weaving to Understand: The Yarns Speak

"It is good one knows but it is best to understand what one knows". (Apau, 2009)

Weaving, to the researcher is a way of understanding oneself; though tedious and time consuming, an activity which disciplines the human subject. To weave means to interlace two sets of threads – warp and weft but there are preparatory processes before the actual weaving process.

The utilisation of different yarns in weaving fabrics exposes me to my conscious and unconscious states, my selves within myself. Engaging with these individual yarns presents the various ways in which the senses can be disciplined but transformed through a creative art.

The various characteristics of yarns used emerge their strengths and weaknesses, when they are subjected to tension and pressure, their ability to withstand and resist friction and stresses teaches me the value of patience, persistence, endurance, power, tolerance and most importantly self-control. I have made weaving analogous to the individual's complex relations with social life.

Yarn breakages, sagging yarns and uneven tensioned yarns, poor shedding among others are resonant of imperfections of human beings; ability to overcome

these during weaving explains the possibility of developing and correcting various imperfections in life.

From the researcher's understanding, the value of weaving is not only in the quality or beauty of the resultant fabric but what one becomes each time weaving undertaken.

Edward Apau
MFA Textile Design
November 20, 2012

This is the concept and motivation behind the production of these samples. Even though the aesthetic and functional qualities of the work are considered, the meaning they send to the end user is believed if well understood will change the perceptions of Ghanaians about the quality, beliefs and meanings of their arts and attitudes.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.0 Overview

This chapter discusses the summary of the study, conclusion and some recommendations.

6.1 Summary

In this modern age, weaving is undertaken by highly mechanized processes; a factory experience. Majority of upholstery fabrics for furniture are imported into the country today. These fabrics are produced with foreign designs and whether these designs are simple or complicated, are woven by the Jacquard or the Dobby looms. However, preliminary studies indicate that some upholstery fabric designs can be hand-woven using the broadloom.

In order to obtain the viability of the project, the following objectives were outlined; to identify and explore suitable weave structures for upholstery fabrics using the broadloom and to assess the suitability of the woven structures for upholstery fabrics. Comprehensive reviews were made on the conceptual and theoretical framework for the study. This was followed by the production of the weaves which were basically studio oriented to produce different upholstery fabric samples.

Interview guide and observational checklists were used as the main instrumentations for the project. Upholstery merchandisers, furniture producers and fabric structure analysts were interviewed while participant observation was employed to acquire in-depth knowledge on the weave structures, yarns, tools and materials used in upholstery fabric production. The Main Library, the College of Art and Social Sciences Library and the Art Education Library of KNUST were visited to

source relevant data for the study. The target population for the study was the locally available yarn types on the textile market while the accessible population was the selected yarns suitable for upholstery fabric production.

The research made use of descriptive research method under qualitative research design. The production of the woven structures was basically executed in the studio and hence studio/practice based research approach was another research design exploited for the study. Purposive sampling technique was employed by the researcher to ascertain the objective of the study. The project involves various productions of selected weave structures that are practical with hand-weaving technique. A systematic outline of the preparation and production processes of the various samples of the study is also presented. Again, the study provides the aesthetical and functional values of the woven samples. It finally presents discussions of results obtained from the woven samples, appreciation of each produced.

6.2 Conclusion

Everybody talks about weaving, uses the word, but only a few know what a loom is. Fewer still have experienced the rhythm, the beat, the movement of the weaver and the loom as they work in the age-old process known broadly as weaving (Karen, 2010).

This first craft of man to cover his nakedness runs through every culture in all countries. Today, the main objective of using fabric has extended to various end uses including covering of furniture.

The art of hand-weaving in every tradition gives a unique identity and relatively portrays the philosophical meanings of the lives and beliefs of the people. Hand-woven fabrics have their own unique aesthetical and functional values that differentiate them from machine-woven fabrics. According to Katherine (2010), hand-

weaving is a relic for museums, crafts fairs, and people in search of something special.

Hand-woven upholstery fabrics revealed by the study can be used for furnishing furniture. Significantly more emphasis should be placed on the type of yarn and the weave structure. These should be strong to withstand the varying pressures and abrasions that the furniture would be subjected to.

Again, the colours of the fabrics play a major role in determining the buying and selling of the fabrics. Weavers should concentrate on dark colours rather than light colours because of the dusty nature of the environment.

Finally, it can be concluded that, the durability of upholstery fabrics whether hand-woven or machine-woven depends on the type of yarn, weave structure and most of all, the rate and the kind of exposure that the furniture is exposed to.

6.3 Recommendations

Hand-weaving is relegated from the various textile disciplines unlike printing, dyeing and fashion in the country. It is time to broaden the knowledge on hand-woven fabrics and venture into their various textile applications such as upholstery. In view of this, the researcher recommends the following for consideration:

The art of hand-weaving transcends the perception of aesthetics and functions. It gives meaning and identity to the things they are used for. Madigan (2010) explains that, weaving is much more than its technical understanding; it gives meaning and beauty to our lives. It actively promotes creativity and self-expression for everyone, regardless of any physical, mental and developmental challenges. It also recognises the failings of machine made uniform approaches to weaving that lack the human spirit. This is a Saori philosophy of weaving in Japan. The researcher proposes that,

Ghanaian hand-weavers should explore other textiles applications like upholstery apart from fabric production to expose their creativity and philosophies in the art as it is found in strip weaving like Kente and Kete.

Katherine (2010) states that, the Indian government offers important subsidies to promote handloom weaving, notably to weavers' cooperatives. These grassroots structures provide raw materials to weavers and commercialise their creations. Promotion of hand-woven fabrics for upholstery fabrics depends on suitable quality yarns. The right types of yarns are not available on the Ghanaian market. The ministry of local industries should liaise with local hand-weavers with respect to yarns acquisition. It is believed that, this will assist weavers in their production of the fabrics.

The researcher is of the view that, to promote hand-weaving, furniture in public offices and institutions, palaces and offices of traditional rulers should be produced with hand-woven upholstery to encourage the local weavers.

Hand-weaving is a tradition that needs to be preserved and encouraged among the youth of Ghana by textiles students. This industry can also be introduced as part of the National Youth Employment Programmes to help the youth in the country gain employable skills.

The study revealed that, most upholstery fabric users do not know much about the characteristics of upholstery fabrics. The researcher suggests that, workshops and seminars can be organised by textile institutes to educate upholstery users on the characteristics of upholstery materials when choosing them for a particular end use; as Grovenor (2011) attests, the ability to constructively select the covering materials will add a certain touch of individuality and originality. A fabric can be chosen that fills all the criteria for durability, design and usability features and functions.

Textile students are entreated to take up practical projects in hand-weaving to uncover more about hand-woven fabrics. This, it is believed, will eradicate the wrong perceptions about hand-weaving. It must be emphasised that, it is not just about the art of weaving but what one learns and becomes through weaving.

Finally, it is recommended that, even though the sample designs produced are meant for individuals who have taste for local hand-woven fabrics, the designs can be adopted and mass-produced for local consumption as it will promote national culture and identity.

REFERENCES

Abbott, C.C. (1977). "A Study to determine.... Designers and Upholsterers", Thesis and Dissertations. Texas Tech University: Graduate Faculty.

Albers, A. (1974). On Weaving: Middletown, Connecticut, USA: Wesleyan University Press.

Arts and Crafts (2006). Retrieved November 17, 2010, from http://www.eternalegypt.org/

Art Methodology (2011). Wikipedia, the free encyclopaedia. Retrieved December 15, 2010, from http://en.wikipedia.org- Art -Methodology/wiki/

Atwater, M.M (1924). Hand Weaving. Harvard Square – Cambridge, Massachusetts. USA: The Shuttle-Craft Co. Inc,

Blanchard, S. (2007). What are the Best Fabrics for Upholstery? Retrieved November 11, 2010, from http://www.essortment.com/articles/

Candy, L. (2010). Practice-Based Research. Retrieved October 18, 2010, from http://www.creativityandcognition.com/content/view/124/131/

Castillo, J.J. (2009). Research Population. Retrieved November 10, 2010, from http://www.experiment-resources.com/research-population.html

Chandler, D. (2011). Jacquard Weaves. Retrieved 8 November, 2010, from http://www.bookdepository.co.uk

Colgrove, D. (2010). Fabric Characteristics – Types of Fabric. Retrieved November 4, 2010, from http://furniture.about.com/

Davies, P. (2001). Exploratory Research. Retrieved October 10, 2010, from http://www.examiner.com/scholarly-research-in-san-jose/exploratory-research

Definition of Qualitative Research (2011). Retrieved November 21, 2011, from http://www.mrc-bsu.cam.ac.uk/cochrane/handbook500/chapter _20/20_2_1_definition_of_qualitative_research.html.

Descriptive Research Paper (2011). Retrieved October 15, 2011, from http://www.pureresearchpapers.com/types/descriptive-research-paper.asp

Design and Art (2009). Wikipedia, the free encyclopaedia. Retrieved December 15, 2010, from http://en.wikipedia.org/wiki/

Dixon, A. (2008). The Handweavers Pattern Directory: Over 600 Weaves for Four-shaft loom (Handback). Interweave press. Pg. 21

DJS Research Ltd (2010). What is Exploratory Research? Retrieved August 6, 2011, from http://www.marketresearchworld.net/index.php?

Dziers, M (March 20, 2006). Textile Design. Retrieved March 3, 2011, from http://www.india-crafts.com/textiledesign.html

Elgier, T (2008). Types of Fabric Weaves. Retrieved November 18, 2010, from http://www.teonline.com/articles/

Estimating Fabric Yardage (2011). Retrieved March 12, 2011 from http://www.reviews.ebay.com/

Gates, D. (2008). Upholstery Fabrics. Australia: Murdock Books Printing Ltd. Pg. 24

Gray, C. and Malins J. (1993). The Centre for Research in Art and Design. Gray's School of Art, Faculty of Design. Scotland, UK: The Robert Gordon University, Aberdeen.

Grevenor, A. (2010). Selecting the Most Suitable Fabric for Your Upholstery. Retrieved November 11, 2010, from http://www.articlesnatch.com/

Hand-weaving: Meaning and Definitions. Retrieved August 4, 2011, from http://www. dictionary.infoplease.com

Hann, M.A and Thomas, B.G (2005). Patterns of Culture: Decorating Weaving Techniques. No. 36 in the Ars Textrina Series, published in association with University of Leeds International Textiles Archives (ULITA)

Hopkins, M. (2008). Upholstery. Holland: New Holland Publishers Ltd. Pg. 35

Ivanova, I. (2010). Interior-Designer-Owner, Bogari. Retrieved October 27, 2010, from http://www.bogarifurniture.com/

Katherine, J. (2010). Why hand-weaving is a technology for the 21st century. Retrieved September 23, 2011, from http://www.theecologist.org/

Kelley, N. (2009). Fabric Properties and Distinctions: Selecting Upholstery Fabrics. Textile Fabric Consultants, Inc. Retrieved December 20, 2010, from http://www.fabrics.net/amyupholstery.asp/

Kicklighter, C.E (2001). Upholstery Fundamental. Goodheart-Wilcox Publishers, pg. 20

Knupfer, N.E and McLellan, H. (2001). Descriptive Research Methodologies. Retrieved October 8, 2011, from the Associations for Educational

Communications and Technology (AECT), 1800 North Stonelake Drive, Suite 2 Bloomington, IN 47404, http://www.aect.org/edtech/ed1/41/41-01.html

Larson, B. (2010). How to Choose an Upholstery Fabric. Retrieved November 14, 2010, from http://www.1stupholsteryfabric.blogspot.com/

Leedy, P.D and Ormrod, J.E (2002). Practical Research: Planning and Design. (Eighth Edition). New Jersey: Pearson Prentice Hall.

Luther, S. (2010). All about Fabric Weaves. Retrieved October 16, 2010, from http://www.xzcution.com/

Mabey, B. (2010). Interior Decorating Sofa Fabrics and How to Choose the Best. Retrieved November 20, 2010, from http://ezinearticles.com/?

Madigan, K. (2010). Soari: Self Discovery through Free Weaving. Retrieved November 16, 2011, from http://www.saoriglobal.com/tabid/71/Default.aspx

Mare, E.C (24/06/09). So what is Design? Retrieved November 18, 2009, from http://www.designcouncil.com/

Maxin, E. (2010). Introduction to Upholstery Fabric. Retrieved December 17, 2010, from http://www.homeinstitute.com/

Methodology (2008). Retrieved November 10, 2011, from http://www.ukdissertation.com/methodology.php

Miller, R. W (2009). Retrieved October 3, 2011, from http://www.static.userland.com/rack4/gems/wrmdesign/Definitionof Design1.doc.

New Collections (2007).Trevira – The Fibre Company No.8. Retrieved November 21, 2010, from http://www.treviracs.com/

Newman, A. (2009). All about Fabric Weaves: A Tutorial. Retrieved October 19, 2010, from http://sew4home.com/tips-resources/buying-guides/

Parma, S. (2010). Different Types of Weaves. Retrieved September 6, 2010, from http://www.fibre2fashion.com/Industry-article/11095/different-types-of-weaves4.asp

Qualitative Research (2011). Wikipedia, the free encyclopaedia. Retrieved December 15, 2010, from http://en.wikipedia.org/wiki/

Research Design (2011). Wikipedia, the free encyclopaedia. Retrieved December 15, 2010, from http://en.wikipedia.org/wiki/

Rolling, J.H. (2010). National Art Education Association Studies in Art Education: A Journal of Issues and Research 2010, 51(2), 102 – 114. Retrieved November 21, 2011, from http://www.bcartsweek.org/assets/uploads

Schneider, J. (1987). The Anthropology of Cloth. New York: Graduate Centre, City University of New York, NY 10036

Selecting Furniture Fabric, Understanding Furniture Fabric (2008). Retrieved November 16, 2010, from http://www.neirc.org/.

Selecting Fabric for Upholstery (15/12/09). Retrieved October 20, 2010, from http://kravet.typepad.com/inspiredtalk/

Seymour, R. (2002). What is Design, Design Council's: Design in Business Week. Retrieved 13 November, 2010.

Siber, M. (2004). Writing an Artist's Statement. Chicago: Columbia College. Revised November, 2011.

Soller, J. (2004). Weave Definitions. Retrieved October 11, 2010, from http://www.solarcomposites.com/

Spirkin, A. (2011). Philosophy and Art. Retrieved September 20, 2011 from http://www.marxists.org./reference/archive/spirkin/works/dialectical-materialism/ch01-s05.html

Stone, J. (2003). Consumer Choices: Understanding apparel and Furnishing Textiles. Edited by Laura Sternweis, Extension Communication Specialist. Reviewed by Sara Kadolp, Assistant Professor, Textiles and Clothing.

Textile Design (2010). Retrieved October 8, 2010, from http://www.india-crafts.com/textile/textile-design.html

Tortora Phyllis, G and Merkel Robert, S. (2005). Fairchild's Dictionary of Textiles – 7th Edition. New York: Fairchild Publications. Pp. 625

Tremblay, K.R and Williams, K (12/05/07). Selecting Upholstered Furniture for Your Home. Retrieved October 23, 2010, from http://www.ext.colostate.edu/pubs/consumer/

Upholstery Basics (2009). Cowles Creative Publishing. Retrieved November 19, 2010, from http://books.google.com.gh/books?

Upholstery Colour, Pattern and Texture (2008). Retrieved October 18, 2010, from http://books.google.com.gh/books?

"Upholstery", Encarta World English Dictionary (1999). London: Bloomsbury Publishing Plc.

Upholstery Fabric (2009). Textile Pattern/ Indian Motif (8/10/09). Retrieved December 11, 2010, from http://www.4to40.com/

Upholstery (2010). Wikipedia, the free encyclopaedia. Retrieved December 15, 2010, from http://en.wikipedia.org/wiki/.

Ward, M. (2010). Design Review. Retrieved October 10,2010 from http://www.blog.echoenduring.com

Webster, M. (1985). Webster`s ninth new collegiate dictionary. Meriam - Webster Inc. Retrieved November 10, 2011 from http://www.socialresearchmethods.net/tutorial/Mugo/tutorial.html.

What are the Different Weaving Techniques (2010). Retrieved October 14, 2010, from http://www.wisegeeks.com/

What is Innovation. Retrieved October 13, 2010, from http://www.realinnovation.com

What is Textile Design (2010). Retrieved October 10, 2010, from http://www.graphicdesignbasics.com/

What is Weaving (2010). Retrieved November 24, 2010, from http://www.wisegeeks.com/what-is-weaving.html

Wiley, J. (2008). Apparel Research. Retrieved November 16, 2010 from http://www.apparelsearch.com

Writing a Literature Review (2009). Retrieved 29 November, 2010, from http://www.smu.ca/administration/library/litrev.html

Wynne, A. (1997). Textiles. Macmillan Education Ltd, London and Basingstoke. Pp. 166-167

APPENDICES

Appendix 1: Interview Guide for Upholstery Merchandisers

1. The name of the shop/store.
2. The name of the merchandiser.
3. The educational background of the merchandiser.
4. The marketing experience of the merchandiser
5. Are the materials locally made, imported or both?
6. Do you know of locally produced upholstery fabrics? Yes / No
7. If yes, where are they produced?
8. What types of upholstery materials do you sell? a) Leather b) Fabric c) Others
9. Which type of upholstery materials receives much patronage?
10. Can you identify the fabric structure of the materials? Yes / No
11. If yes, what are the major classes of fabric structures available in your shop? Woven / Non-woven / Knitted / others
12. Do you know the types of fibres used in producing the upholstery fabrics? Yes / No
13. If yes, identify the types of fibres usually used in upholstery fabric manufacture.....

Appendix 2: Interview Guide for Upholstery Furniture Producers

1. The name of the furniture producer.
2. The name of the workshop.
3. The location of the workshop.
4. Have you had any formal education? Yes or No
5. If yes, to which level.
6. For how long have you been in the furniture business?
7. Do you know the types of upholstery materials for furniture e.g. leather, fabric, non-woven or others? Yes / No
8. Which type of upholstery material do you normally use for furniture?
   Leather / Fabrics/ Both.
9. Do you understand the meaning of fabric structure?
10. In selecting upholstery fabric for your furniture, do you consider the structure?
    Yes / No
11. Justify your answer in the question 10.
12. Do you know the types of fibres used for furniture upholstery fabrics?
    Yes / No
13. Have you ever come across locally made furniture upholstery fabrics before?
    Yes / No
14. If yes, where and when?

Appendix 3: Interview Guide for Fabric Structure Analyst/Experts

Name: .....

Profession: .....

Working Experience (Years): .....

1. In your opinion, what do you consider as upholstery fabric
2. What other uses have upholstery fabrics?
3. Can you elaborate on the types and characteristics of upholstery fabrics?
4. Which upholstery materials are suitable for furniture? Leather / Fabric
5. Which fabric construction method(s) would you recommend for furniture upholstery and why?
6. Which woven fabric structure is ideal for furniture upholstery and why?
7. What significance would the type(s) of yarns used in the manufacture of particular furniture upholstery have on its usage?
8. Do you know of any locally made upholstery fabric? Yes or No
9. If yes, where and when.
10. Would you prefer locally made upholstery fabrics to the foreign types? Yes or No
11. State reason(s) for answer in question 10.

Appendix 4: Observation Guide for Locally Available Upholstery Materials

1. The name of the upholstery shop/store
2. Location of the shop
3. The types of upholstery materials. (a)Leather(s) (b) Fabric (c) Both
4. What is the origin of production? (a) Local (b) Foreign (c) Both
5. Which production technique(s) is/are used in the manufacture of the upholstery fabrics? A) Handmade b) Machine made c) Both
6. The structure of the upholstery fabrics. (a) Woven (b) Knitted (c) Non-woven (d) others
7. If woven, what is the weave structure? (a) Plain (b) Twill (c) Satin/Sateen (d) Compound weaves
8. If knitted, what is the knitted structure?
9. If non-woven, what is the method of production?
10. The type of fibres used for the upholstery fabrics. (a) Natural fibres (b) Manmade fibres (c) Blends/Mixtures
11. Which specific type of fibres can be identified in observation 10 above?

    .....

    .....

12. What are the physical properties of the existing upholstery fabrics?

    Texture – smooth/rough/ fluffy/harsh/

    Weight- Heavy/light

    Tenacity- weak/strong