

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,  
KUMASI, GHANA**

**COLLEGE OF ART AND SOCIAL SCIENCES**

**DEPARTMENT OF INDUSTRIAL ART**

**EXPLORATION OF INNOVATIVE TECHNIQUES FOR TEXTILE PRINTING**

**BY**

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**JUNE, 2014**

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# **EXPLORATION OF INNOVATIVE TECHNIQUES FOR TEXTILE PRINTING**

BY

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**(B A. INDUSTRIAL ART - TEXTILES)**

A Thesis submitted to the School of Graduate Studies, Kwame Nkrumah University of  
Science and Technology in partial fulfilment of the requirements for the degree of

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Faculty of Art, College of Art and Social Sciences

**KWAME NKURUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,  
KUMASI, GHANA**

**JUNE, 2014**

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## DECLARATION

I hereby declare that this submission is my own work towards the Master of Fine Art programme in Textile Design 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 in the University, except where due acknowledgement has been made in the text.

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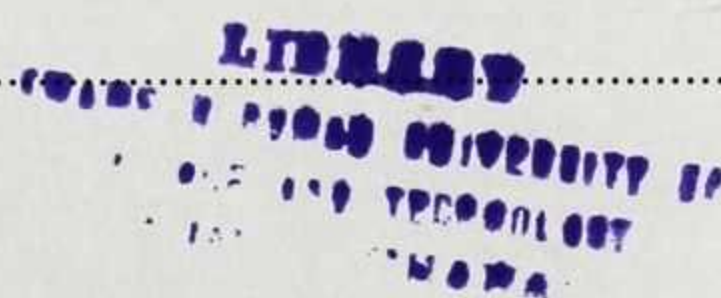
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## ABSTRACT

This thesis uncovers innovative ways of printing textiles as a means of decorating them to salvage the ailing local Ghanaian textile industry. The trend in fashion is dynamic and as such, people's preferences for fabrics keep revolving. This therefore gives an urgent call for the need to explore various methods of printing, since these are the possible ways to respond to the fabric needs of these new trends in fashion. This research seeks to provide various techniques of textile printing through studio-based exploration that may perhaps be incorporated into the existing ones for printing fabrics, thus, contributing to the total development of textile education in the country. The researcher adopted the experimental, descriptive and exploratory research methods in identifying these techniques. Various stakeholders in the textile industry whose opinions were sought included local print textile producers, textile tutors, studio technicians and textile students. Several tools and materials, both natural and artificial alike were used in the experimentation process on different kinds of fabrics. These include leaves, flowers, grasses, twigs, print paste, brushes, acrylic paint, spraying tools and stencils. The scope for the study is the Ashanti region of Ghana where most small-scale textile printers are located. Fabrics so produced using these identified techniques are appreciated and recommendations made for the general improvement of the small scale textile printing industry.



## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Study

Textile printing remains the one and only means through which designs are transferred onto the surfaces of textile substrates with the aid of print paste. Printing is widely used in various styles on either fabrics or yarns. Textile printing according to Tortora et al (1996) is the application of colourants in definite repeated patterns to a fabric, yarn or sliver by any one of a number of methods other than dyeing. The authors further elaborated that in textile printing, a pigment is deposited in the form of paste and treated with steam or chemicals to cause it to migrate into or adhere to the textile material; the design is not woven or knitted to the cloth but applied after the cloth is made.

However, a narration by Storey (1992), is of the observation that the term “textile printing” is vague and could be used to indicate the patterning of cloth by means of printing, dyeing or painting. She went beyond this to divide printed fabrics into four classes or styles, namely, the ‘resist’ style, the ‘dyed’ (or mordant) style, the ‘discharge’ style and the ‘direct’ style. This therefore means that the term has several interpretations and as such could include dyed, sprayed or even painted fabrics or any format through which a paste is used to successfully transfer a design onto the surface of a fabric.

For several decades, the technique of textile printing has undergone significant transformation due to major research, development and innovation in the sector with the latest one being digital printing of fabrics and garments with inkjet printers. Thanks to this technology, designs are now printed directly from a computer onto a fabric,



which prints just with the click of a button. This is possible partly due to the efforts of textile chemists in the development of new materials such as dyes and inks (pigments) to suite these newly developed textile-printing machinery and consequently meet up with the ever-changing trends in textiles. Even with these achievements, textile technologists and machinery manufacturers still put in strenuous efforts aimed at further modification of these processes to reduce production time and cost to its barest minimum.

This is however not the case with the small-scale Ghanaian textile industry which has remained virtually the same for several years, which is either due to the challenge in lack of innovation in the techniques or the influx of cheap print fabrics mostly from China. This therefore clearly means there is the need for thorough research and innovation in the local textile industry, especially in the area of printing since according to Burgess et al (2004), almost 70% of fabrics are dyed, 20% printed, 5% made from dyed yarn, and 5% are produced white. Quartey (2006), on the other hand indicates that print fabrics account for about 60% of fabric consumption in Ghana and create employment for a significant percentage of the population in the manufacturing sub-sector of the economy.

Thus, from the narrations above, it is a clear indication that the need for a call into an investigation for innovative ways of printing these textiles is long overdue and could not have been at any appropriate period than now that the local textile industry is facing enormous challenges.



## **1.2 Statement of the Problem**

Aside the structural design of fabrics, there are numerous printing and dyeing techniques or styles of decorating fabrics that could generate interesting effects. However, some few among these abundant techniques are frequently and commonly applied by most Ghanaian small and large scale textile print producers whereas the rest are often neglected, thereby creating monotony and stifling creativity in the printing and dyeing of fabrics (Acheampong E., personal communication, February 13, 2011). These frequently used ones are basically rotary screen printing, flat screen-printing, roller printing, block printing and transfer printing.

The aim of this research therefore is to identify some unconventional printing methods by exploring and combining various techniques with dye and print paste on different kinds of textile substrates to generate new methods whose usage would be applicable in printing fabrics.

## **1.3 Objectives**

1. To identify new techniques for textile printing through studio experimentation.
2. To explore appropriate objects that could be used in the printing process.
3. To employ the newly identified techniques in printing as means of decorating fabrics.

## **1.4 Delimitations**

The study was conducted within the Kumasi Metropolis, specifically the campus of Kwame Nkrumah University of Science and Technology (KNUST).

The content of this project was to explore new procedures of printing fabrics as a means of decorating them for use. Therefore, its boundaries are limited to the



exploration for new techniques through studio experiments that would be performed on sample fabrics to test their feasibility. Larger fabrics of four yards would then be printed on six selected techniques and some sewn into garments.

### **1.5 Research Methodology**

The research methods for this study are investigative and experimental research methods which are categorized under qualitative research design (Leedy & Ormrod, 2005). This is because the study looked out for new techniques of printing textiles and employing them either in isolation or in combination with the existing ones. Sample pieces of fabric were first tested for the viability of these techniques after which they were demonstrated on larger fabrics of three yards.

### **1.6 Importance of Study**

The relevance of this study is to provide researchers, students, lecturers and textile manufacturers with new techniques of printing textile fabrics. This would add up to the existing techniques, giving producers an array of techniques to choose from while providing consumers with “uniquely” printed fabrics.

### **1.7 Research Tool**

The data gathering tool for this research is observation. The above research tool is chosen because it is the appropriate tool that gives objective report of research findings.

This data collecting instrument is flexible and has the advantage of considering anything that emanates during the collection period. The researcher shifts focus from one thing to the other as new and possibly significant objects present themselves. The disadvantage of this instrument however, is that the researcher might waste considerable time especially at the start, observing for the right data. With this type of



research tool, the researcher observed fabrics produced by small scale textile printers with regards to the methods and materials they employed in their works.

### **1.8 Definition of Technical Terms**

**Acrilex:** Premix acrylic base print paste in squirt bottles which give glittering effects.

**Acripuff:** Premix acrylic base print paste in squirt bottles which do not give glittering effects.

**Appreciation:** This refers to the artistic discussion of the beauty or aesthetic value of an artefact.

**Innovative techniques:** Techniques which are obtaining through variation or merging of existing ones to come out with ones.

**Motif:** It is the main symbol, a single element or the unit of a design which is repeated to form a complete design appropriate for printing onto a fabric.

**Squeegee:** A tool mostly made of wood and flexible leather which is usually used in pushing print paste through the screen during screen printing.

**Textures:** They are the elements that are made on the background of arranged motifs in a textile design layout. They could be dots, curves, lines, scales, etc

**Textile Printing Styles:** The four main categories of direct, discharge, resist and dyed (mordant) under which all printing methods are classified.



## **1.9 Facilities for the Research**

The facilities available to conduct this research comprise the following:

- Internet facilities
- Faculty of Art Library, KNUST
- KNUST Main Library
- Art Education Library, KNUST
- British Council Library (Kumasi)
- Printing and Dyeing Studios of the Department of Industrial Art, KNUST

## **1.10 Arrangement of the rest of the Texts**

Chapter Two deals with review of related literature that covers concept of textile printing, textile printing styles and innovation in textile printing.

Chapter Three gives an account of the methodology employed for the study whilst

Chapter Four narrates the procedures, materials and tools used in the exploration of these printing techniques.

The results and appreciation of the printed fabrics are presented in chapter five

Chapter Six gives the summary, conclusion and recommendations of the report.



## CHAPTER TWO

### REVIEW OF RELATED LITERATURE

This chapter is intended to review the relevant and related literature to support this study. The review covers scholarly writings on the topic of this research and affords the researcher the opportunity to determine/ identify which aspects of the concept of textile printing, textile printing styles and innovation in textile printing that have already been dealt with as well as the gaps that need to be filled.

#### 2.1 The Concept of Textile Printing

According to Miles (2003), textile printing is the most versatile and important of the methods used for introducing colour and design to textile fabrics. It is a process of bringing together a design idea, one or more colourants, and a textile substrate (usually a fabric), using a technique for applying the colourants with some precision. Several techniques have been used and the colourants available have multiplied; thereby providing consumers with numerous choices.

In support of the above statement, textile printing is the process of applying colour to fabric in definite patterns. In properly printed fabrics, the colour is bonded with the fibre, to resist washing and friction. The author goes further to explain the distinction between printing and dyeing by putting on record that:

*textile printing is related to dyeing but whereas in dyeing proper the whole fabric is uniformly covered with one colour, in printing however; one or more colours are applied in sharply defined patterns to certain parts only.*

Moser (2003) also defines textile printing as the area of textile processing used for applying colour in a localized design or pattern to a textile material, normally fabric.



Furthermore, textile printing involves the production of a predetermined coloured pattern on a fabric, usually with a definite repeat. It can be described as a localised form of dyeing, applying pigment to selected areas of the fabric to build up the design. Textile Printing, like textile dyeing, is a process for applying colour to a substrate.

However, instead of colouring the whole substrate (cloth, carpet or yarn) as in dyeing, print colour is applied only to defined areas to obtain the desired pattern. This involves different techniques and different machinery with respect to dyeing, but the physical and chemical processes that take place between the dye and the fibre are analogous to dyeing (Farrer, 1990). In addition, Storey (1992), is of the view that “textile printing” is an ambiguous one which is used to indicate the patterning of cloth by means of printing, dyeing or painting. Thus, methods of colouring some areas of fabrics differently from others by using dyes, pigments and paints are all termed as printing although, some of these are not strictly printing but rather dyeing and colouring techniques. The term printing in textile sense refers to the technique or idea of transferring a design onto the surface of a textile substrate (fabric, yarn or fibre). It does not involve weaving or knitting which deal with the structural design of fabrics. Textile printing is comparable to textile dyeing. Nevertheless, in contrast to dyeing, printing is used to add colour in localized areas only. Printing therefore is a form of localized dyeing. Wilson (2001) also indicates that printed fabrics usually have clear-cut edges in the design portion on the face of the fabric and the colour seldom penetrates to the back. Furthermore, the appearance of a printed textile is affected by several different elements, which include the base fabric on which the pattern is printed, the design and repeat across the fabric, the types of dyestuffs applied and the way these are applied to the fabric.



Horrocks & Anand (2000) aside sharing their opinion on the concept of textile printing touched on the cost-effectiveness by indicating that "it is a vital economical way of producing colourful effects on fabrics and to a lesser extent on yarns". Textile printing allows for great design flexibility and relative inexpensive patterned fabrics and can be said to be a highly industrial art of long history. Printing leads to the production of a design or motif on a substrate by application of a colour or other reagents, usually in a paste or ink, in a predetermined pattern. In printing, each colour is normally applied separately and wide varieties of printing techniques are used.

These several techniques of printing, which can be distinguished from the printing styles include but not limited to the following block printing, roller printing, screen-printing (rotary and flat) and transfer printing. The printing styles however, are often categorized into four different classes namely the resist style, the discharge style, the dyed or mordant style, and the direct style.

All these four styles can be used in conjunction with great variety from the simplest tie-dye technique to the most elaborate and sophisticated of modern rotary screen printing machinery. In printing, wooden blocks, stencils, engraved plates, rollers, or silk-screens can be used to place colours on the fabric. Pigments used in printing contain dyes thickened to prevent the colour from spreading by capillary attraction beyond the limits of the pattern or design.



## 2.2 Textile Printing Styles

According to Storey (1992), there are four printing styles, which include the resist style, dyed style, discharge style, and the direct style. In spite of the fact that many different methods of printing have been developed, they all fall under each of these four major classifications (Wilson, 2001).

These narrations from the authors therefore strongly affirm the fact that irrespective of the kind of technique used in printing a textile fabric, it might be either one or a blend of these four styles. These authors and others went further to elaborate on the four main printing styles as given below:

### 2.2.1 The Resist Style

The principle behind this method is that the pattern area is painted or stamped with a 'resist' made from rice paste, clay or some type of wax. The cloth is then dyed, leaving the pattern area reserved in white against a dyed background. As far as the Coptic cloths are concerned, the patterns were stamped with small blocks in geometric shapes, several being used in different combinations, the fabric then being passed through a bath of indigo or other blue dyes. Kiron (2011) is of the view that, in the case of resist printing, a special printing paste (called resist) is printed onto certain areas of the fabric to prevent dye fixation. On the other hand, with a chemical resist, dye fixation is prevented by a chemical reaction. Depending on the way the process is carried out, one can speak of pre-printing, intermediate or over-printing resists. One common procedure is the wet-on-wet process in which the resist paste is initially printed, and then the material is overprinted with full cover screen and finally fixed and washed. Over-printing resists can be applied only if the dye, already present in the previously dyed and dried fabric, is still in its unfixed form, as in the case of developing dyes. Kadolph (2007) also explains that, resist methods block colour absorption during yarn or fabric



dyeing or during colour application. Some resist methods such as batik, tie-die and *ikat* use dye baths to impart colour to the textile and can be considered resist dyeing.

Wilson (2001) also indicates that in the resist technique, a substance that prevents the cloth from taking up the dye (the resist) is applied to areas of the cloth and then dyed. The areas treated with the resist are not coloured, retaining the ground colour of the fabric. He further states that mordant and resist dyeing are older than discharge and direct and substantiated his claim by pointing out that early Coptic fabrics were created by using blocks to stamp on the resist pattern and passed through a dye bath of indigo. Another narration is of the opinion that resist dyeing is a term for a number of traditional methods of dyeing textiles with patterns. Several methods are used to "resist" or prevent the dye from reaching all the cloth, thereby creating a pattern and ground. The most common forms used include wax, some type of paste, or a mechanical resist that manipulates the cloth such as tying or stitching. Another form of resist involves using a chemical agent in a specific type of dye that will repel other types of dye printed over the top. The most well-known varieties today include tie-dye and batik.

From a historical viewpoint, Kiron (2011) further explains that: Resist dyeing has been very widely used in Eurasia and Africa since Antiquity and the first discoveries of pieces of linen was from Egypt and date from the fourth century. The cloths that were used for the mummies were usually soaked in wax, dyed with a mixture of blood and ashes and later washed in ~~hot water~~ to remove the wax. That aside, in the Asian continent, this technique was practiced in China during the T'ang dynasty (618-907) and in India and Japan in the Nara period (645-794). In Africa, it was originally practiced by the Yoruba tribe in Nigeria as well as the Soninke and Wolof in Senegal.



Considering the explanations and definitions given by the above authors, it could be said that resist printing/dyeing is a style or method in which certain portions of a fabric to be printed or dyed is prevented from taking up the dye or print paste through the use of wax or resist paste.

### 2.2.2 The Dyed Style

Wilson (2001) narrated that, in this method of colouring fabric, dyeing is used to colour parts of a fabric. A mordant, usually a metallic oxide, is used as a fixing agent for the dyestuffs. The mordant is painted on cloth in the desired pattern areas and the cloth is immersed in a bath of dye solution. The dye only becomes fixed to the fabric in those areas where the mordant has been painted because the mordant reacts with the dyestuff making it insoluble to washing and fast to light. Different mordant will react with a dye to give different colours and this means that a cloth painted with several mordant can be passed through one dye bath and rinsed off to give a pattern of many colours.

In printing of a mordant in the desired pattern prior to a dyed cloth, the colour adheres only where the mordant was printed. The colouring matter obtained from animal and vegetable sources needs to be used in conjunction with a fixing agent (mordant), usually in the form of a metallic oxide or acetate, in order to make the dye insoluble when washing and fast when exposed to light. When the cloth is dyed, only those areas of pattern so painted take the colour, the mordant and vegetable colouring matter forming an insoluble colour ~~after fixing~~ in the open air, and the unmordanted parts washing clear and clean in water (Miles, 2003).

In this method of printing and dyeing, it could be established that the fixing agent is rather printed on the fabric so that as the fabric is immersed in a dye solution, only the areas where this fixing agent is printed makes the dye insoluble in water. The non-



printed portions which remain soluble therefore washes off when the fabric is rinsed in water whilst the dye remains chemically bonded in the printed areas.

### 2.2.3 The Discharge Style

In the early 1800s, it was discovered that it was possible to print a fabric that had already been piece-dyed with chemicals that would remove or discharge the dye. Printing such chemicals in selected areas allowed fairly intricate and fine patterns to be created and the areas where the colour was removed could subsequently be printed with further colour. Nowadays, colour discharges are produced using dyestuffs that are unaffected by the chemical discharging agent. Combining these with the discharge paste means that the original colour can be removed and a new one put in its place in the same printing process (Wilson, 2001).

Comparatively, recently, in the early part of the nineteenth century, it was discovered that a pattern from an already dyed cloth can be bleached or 'discharged'. This discharging process enables fairly intricate and fine patterns to be printed, giving the effect of resist dyeing. Subsequently, these white areas could be reprinted in colour (Storey, 1992).

Additionally, Collier (1970) is of the opinion that discharge printing, is when some or the entire colour is removed from an already dyed fabric. It further outlined that resist and discharge techniques were particularly fashionable in the 19th century, as were combination techniques in which indigo resist was used to create blue backgrounds prior to block printing of other colours. Most modern industrialized printing use direct printing techniques.

In addition, Kadolph (2007) indicated that discharge prints are piece-dyed fabrics in which the printing is usually done on dark backgrounds. The fabric is first piece-dyed



by any appropriate method. In this method, paste containing substances to take out the colour is printed on the fabric using roller or screen techniques. Some dyes that are not harmed by the discharge agents can be mixed with printing solution if colour is desired in the discharge areas.

Williams (2002) also observes that discharge is the process of chemically removing colour from previously dyed fabric. Fabrics dyed with reactive dyes will discharge to shades ranging from white to pastels to not at all, depending on the dye colours and discharging agent used. According to Kiron (2011), it is possible to speak of discharge printing, if in the fixation process that follows the application of the printing paste, there is local destruction of a dye applied previously. If the etched (discharge), previously dyed area becomes white, then the process is called white discharge. Besides, (Karthikeyan & Dhurai, 2011), are of the view that discharge printing, also called Extract Printing, is a method of applying a design to coloured fabric by printing chlorine or hydrosulphite to decolourize out a white or light pattern on the darker coloured ground. In colour-discharge printing, a dye impervious to the bleaching agent is combined with it, producing a coloured design instead of white on the dyed ground. If, on the contrary, a coloured pattern has to be obtained in the etched area after the destruction of the previously applied dye, then the process is called coloured discharge.

In this case, the printing paste must contain a reduction-resistant dye along with the chemicals needed to destroy the previous one. As a result, the pre-dyed background is destroyed according to a pattern and the dye, which is resistant to reduction, takes its place.

This means that from the analysis of these authors, discharge printing is a technique whereby a pattern or design is achieved on an already dyed fabric by etching or removing the ground colour to obtain a different one with the aid of certain chemicals.



The colour is not printed directly nor the fabric made to resist dye penetration. Instead, colour is rather taken off to reveal a white background or another colour introduced in its place.

#### 2.2.4 The Direct Style

Until the advent of chemically produced dyestuffs, there was very little direct printing (that is with a paste containing both the colour and the fixing agent). The exceptions were almost all pigment colours. These colours unlike dyestuff, which stain the fibre of the cloth, merely coat the outside of each warp and weft thread they contact (Storey, 1992). Agreeing to the above, Kadolph (2007) observes that, in direct printing, colour is applied directly to the fabric in the pattern and location desired in the finished fabric. The author goes further to attribute the reason for the common usage of direct printing on fabrics to its convenience and economical significance.

From Collier (1970) also, direct printing is the kind of printing in which colourants containing dyes, thickeners, and the mordants or substances necessary for fixing the colour on the cloth are printed in the desired pattern. Wilson (2001) as well points out that, this is the direct printing of a colourant to the desired pattern areas. To elaborate further, the writer adds that prior to the introduction of chemically produced dyestuffs, the only type of direct printing use pigments. He further states that pigments merely coat the surface of a fabric, unlike dyes, which penetrate and stain the actual fibres.

From the above authors, it is observable that direct printing could be referred to as the printing-style that comprises the exact introduction of colour onto a fabric. It does not involve the removal of already dyed pigment, the use of a mordant or any resist technique. It could therefore be emphatically stated that as the name suggests, this



method involves the printing of preferred designs or patterns onto the surfaces of textile substrates precisely with paste.

### 2.3 Innovation in Textile Printing

According to Maranville (1992), innovation is the creation of better or more effective ideas, technologies, processes, products or services, that are accepted by society. It further draws the dichotomy between innovation and invention by indicating that innovation differs from invention in that innovation refers to the use of a new idea or method, whereas invention refers more directly to the creation of the idea or method itself. Touching on the importance of innovation, Burgess et al, (2004) indicated that innovation is very crucial that its relevance cannot be underestimated. Technical improvement especially in small scale production firms is widely acknowledged as one of the main engines for sustaining competitiveness and general progress (Freeman, 1982; Porter, 1985; Trott, 2002). This therefore indicates that in essence, innovation is seen as the indispensable step to the competitive success of individual small scale firms and indigenous print textile sector as a whole as attested by (Sadowski and Roth, 1999; Zahra et al, 1994). For several decades since its inception, local textile printing in almost all its various forms has undergone numerous transformations. These modifications or improvement in techniques can be attributed to researchers' zeal to either in one way or the other conduct investigations into the processes themselves or tools, equipment and materials used in these processes. This, according to Abernathy and Utterback (1978), is the division of innovation process into three types, which include product innovation, process innovation and administrative or organizational innovation.







## **CHAPTER THREE**

### **METHODOLOGY**

This chapter focuses on the methodologies employed in undertaking the studio experiments of the project. It comprises the library research, the research design and the data gathering instrument employed.

#### **3.1 Library Research**

The library research for this project was conducted at the University Main Library and Faculty of Art Library, College of Art and Social Sciences of the Kwame Nkrumah University of Science and Technology (KNUST). The data for this project were gathered from encyclopaedias, dictionaries, journals, magazines, internet websites and textbooks that are very useful in textile printing. The data which comprises secondary data were collected for the literature review on topics such as the concept of textile printing, textile printing styles, innovation in textile printing as well as methodologies of the project.

#### **3.2 Research Design**

In order to effectively deal with the study, which purpose is to generate printing techniques through studio-based experimentation, qualitative research approach was adopted. This is because in recent academic endeavours, this research design is employed in most ~~investigative studies~~ especially the creative arts as in this case. Qualitative research design utilizes both experimental and descriptive research methods, which are very relevant in attaining the expected results. This is because they best identify and describe variables and their effects on each other. In the case of this



research, various media and tools were employed in the generation of these techniques to add-up to and modify the current ones adopted in the Ghanaian textile print industry.

### 3.2.1 Experimental Research

From Blakstad (2008), in scientific inquiry, an experiment is from Latin: *ex-periri*, meaning, "to try out". It is a method of investigating causal relationships among variables. It is a research investigation that an investigator manipulates one or more independent variables to determine their effects on a dependent variable (phenomena). Randomized controlled research or randomized controlled trials are terms often used to refer to experimental research design. It is a systematic and scientific approach to research, which the researcher manipulates one or more variables, controls and measures any changes in other variables.

The experimental research design is used where; there is time priority in a causal relationship (cause precedes effect), there is consistency in a causal relationship (a cause will always lead to the same effect) and where the magnitude of the correlation is great.

The three crucial characteristics of all experimental research are control, manipulation and observation, which provide a method for testing the end result. This type of research design is paramount for practically oriented research as in the case of an MFA project, because it finds its utmost usefulness in the studios. Although this fact has been proven over the years, it is also successfully applied within the non-studios setting too.

In consonance with this project, the researcher as much as possible sustained his control over all factors that could affect the result of the experiment. The focus of this project was to generate new techniques for textile printing by varying, manipulating



and blending of existing techniques as well as experimenting with various tools, materials and objects. It also aims at assessing the possibilities of transferring paste onto the surface of a textile substrate. Experimentation with materials and objects were conducted in printing and dyeing studios and findings (results) discussed.

### 3.2.2 Descriptive Research

Descriptive Research, also known as statistical research, describes data and characteristics about the population or phenomenon being studied. However, it does not answer questions or queries such as: how, when and why certain characteristics occurred (Shields et al, 2013). In descriptive research, although the data description is factual, accurate and systematic, the research cannot describe what caused a situation. Thus, descriptive research cannot be used to create a causal relationship, where one variable affects another. In other words, descriptive research can be said to have a low requirement for internal validity.

The description is used for frequencies, averages and other statistical calculations. Often the best approach, prior to writing descriptive research, is to conduct a survey investigation. The aim of description is often noticed in qualitative research and researchers may follow-up with examinations of why the observations exist and what the implications of the findings are. The objective of descriptive research is to describe things, such as the market potential for a product or the demographics and attitudes of consumers who buy the product. This type of research was also adopted by the researcher so as to better describe the techniques explored. The procedures involved in the experimentation as well as the tools and materials that were used.



### **3.3 Art-Based Research**

According to McNiff (1998), Art-based research can be defined as the systematic use of the artistic process, the actual making of artistic expressions in all of the different forms of the arts, as a primary way of understanding and examining experience by both researchers and the people that they involve in their studies. These inquiries are distinguished from research activities where the arts may play a significant role but are essentially used as data for investigations that take place within academic disciplines that utilize more traditional scientific, verbal and mathematical descriptions and analysis of phenomena. To add to the above, Malins & Gray (1995) explain that art based research is often termed “practice-based” or “practice-led”.

That is to say, it involves studio practice and that in this kind of research, the application of the researcher’s knowledge in aesthetic faculties and physical skills determine the value of their research to others who work in the field of applied arts. The authors added that art-based research often finds its usage in such arts as textiles, jewellery, ceramics, blacksmithing, painting, weaving among others. The researcher employed this in the work through the use of different print pastes, fabrics and tools in expressing his artistic idea and understanding of printing through successful organization of the elements and principles of art.

### **3.4 Exploratory Research**

Exploratory Research is initial research conducted to clarify and define the nature of a problem (Shields et al, 2013). The objective of exploratory research is to gather preliminary information that will help define problems and suggest hypotheses. It facilitates investigation into a problem or situation that provides insights to the researcher. The research is meant to provide details where a small amount of



information exists. It may use a variety of methods such as trial studies, interviews, group discussions, experiments, or other tactics for the purpose of gaining information (Brains et al, 2011).

This kind of research often seeks to delve into areas where little is known or to investigate the possibilities of undertaking a particular study or project as outlined by Kumar & Ranjit (2005). To add to the above, it could be stated that the purpose of exploratory research is intertwined with the need for a clear and precise statement of the recognized problem. As espoused by Kumar & Ranjit (2005), researchers conduct exploratory research for three interrelated purposes: 1. diagnosing a situation 2. Screening alternatives and 3. Discovering new ideas. Thus, exploratory research helps diagnose the dimensions of problems so that successive research projects will be on target; it helps set priorities for research. This type of research was also adopted to examine the causes and effects of various media, tools and materials used in the project.

### **3.5 Data Gathering Tools**

In every research work, there is the crucial need to collect data in order to draw substantial conclusions. The various methods used in gathering this data are what are referred to as data gathering or data collection tools. The most notable ones among these are questionnaire, interview and observation. The research tool used in collecting the necessary data for this project was observation. According to Leedy & Ormrod (2005), observation as a research tool is free flowing and unstructured: The researcher swings focus from one thing to another as new and potentially significant objects avail themselves. This data collecting instrument is flexible and has the advantage of taking into consideration anything that comes up during the period of collection. The



disadvantage of this instrument is that the researcher might waste considerable time especially at the start, observing for the right data. The researcher observed fabrics produced by small-scale textile printers in the Ashanti region with keen interest in the production methods and materials used.



## **CHAPTER FOUR**

### **EXPLORATION OF PRINTING TECHNIQUES**

This chapter gives account of the studio experiments that were conducted in search of the printing techniques. It enumerates the tools and materials, objects and more importantly, the procedures involved in this studio-based exploration process of all the techniques. In undertaking this studio experiments, the prime aim, which was, to generate new techniques and test their potentials by employing them in textile printing, was greatly taken into consideration. The procedure adopted was to vary and merge existing techniques to come out with these unconventional methods of printing textiles. Fourteen techniques were explored in all, these techniques were categorized into three groups; plant sources, artificial sources and combined sources. The plant sources refer to those techniques explored using natural objects of plant base such as leaves, flowers, grasses, local sponge and wood. The artificial source on the other hand refers to those explored by employing man-made objects. The combined sources however, are those in which at least two techniques were merged from either the above-mentioned natural and artificial sources. Six techniques were explored under the combined sources; five under the artificial sources and three techniques under plant sources. The water based print paste and acrylic based paste were used. However, for techniques such as those that involved the use of squirt bottle as a tool for printing, the ready-made acrylics (acrylic base print pastes) were employed. This is for the simple reason that the tips of such bottles are better controlled during printing. These explored techniques are explained successively below:



## 4.1 Techniques from Plant Sources

The techniques under this category include those that employed the use of plants parts such as leaves, flowers, grasses, local sponge and wood. These plant based techniques, which are three in number with their processes, are detailed below:

### 4.1.1 Spray Printing Technique

The idea in this technique was to place some objects on the surface of a fabric and spray with print paste. The sample fabric of half a yard was cut and stretched out on the printing table in the studio with the aid of a stapler, with the grasses, leaves and flower stalks, these were then arranged on the surface of the stretched fabric as shown in Plate 1.



Plate 1: Arrangement of objects on fabric to be sprayed

It is important to state that the leaves and flowers were arranged in a desired order while the grasses were sprinkled on the surface of the stretched fabric to achieve an overlapping effect. After arranging these items, the print paste was mixed with water to a light consistency and poured into the reservoir of a pesticide hand pump that is usually used in spraying vegetables. The Spraying was then done over the leaves and grasses on the fabric and allowed to dry as shown in Plates 2 (a & b).





(a)



(b)

Plate 2 (a & b): Spray Printing Technique

#### 4.1.2 Local Sponge and Broomsticks Printing

In this technique, a kind of traditional sponge made from tree barks called “*kocha*” in the Ga dialect was used together with local broomsticks. The sponge was cut-off from the bunch, twisted and tied with thread in the preferred manner before attaching it to a wooden block with adhesives (white glue). The sponge was twisted and tied in the shape of the letter “S” while two pieces of wood were also glued in-between the sponge in order to observe the print results of the two side-by-side. The handle of the block was then fixed with nails after the glued items have dried and used in stamping with print paste to give the desired shape as is normally the case in block printing (Plates 3 and 4).



Plate 3: Sponge block



Plate 4: Printing with sponge block



After the two colours have been printed successively, with approximately ten minutes allowed for drying, the outcome was not good as expected so the broomsticks were then used in printing the fabric with green paste. This serves as textures in the printed fabric and improves the aesthetic appeal as well (Plates 5 and 6).



Plate 5: Scratching of fabric with broomsticks

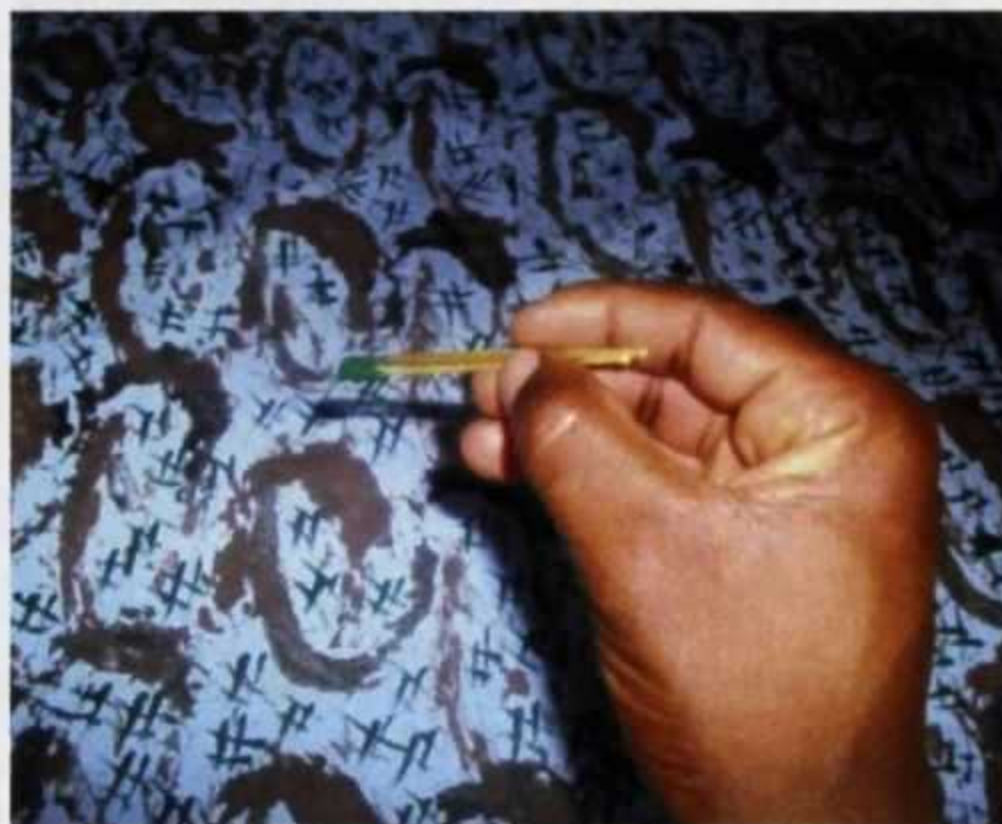


Plate 6: Broomsticks with paste

#### 4.1.3 Twigs Block Printing

In this technique, a number of twigs were gathered, cut and arranged on a wooden block in a desired manner with the aid of adhesive (white glue). After the gluing process, the block was allowed for about a time period of twelve hours to dry so that the twigs could remain attached firmly on the glued surface for printing.

The aim of this experiment was to find out the possibility of transferring print paste with these twigs directly onto a fabric so as to take the shape of these twigs. Plates 7 and 8 below show the twigs block and the printing process with this block.





Plate 7: Twigs block with print paste

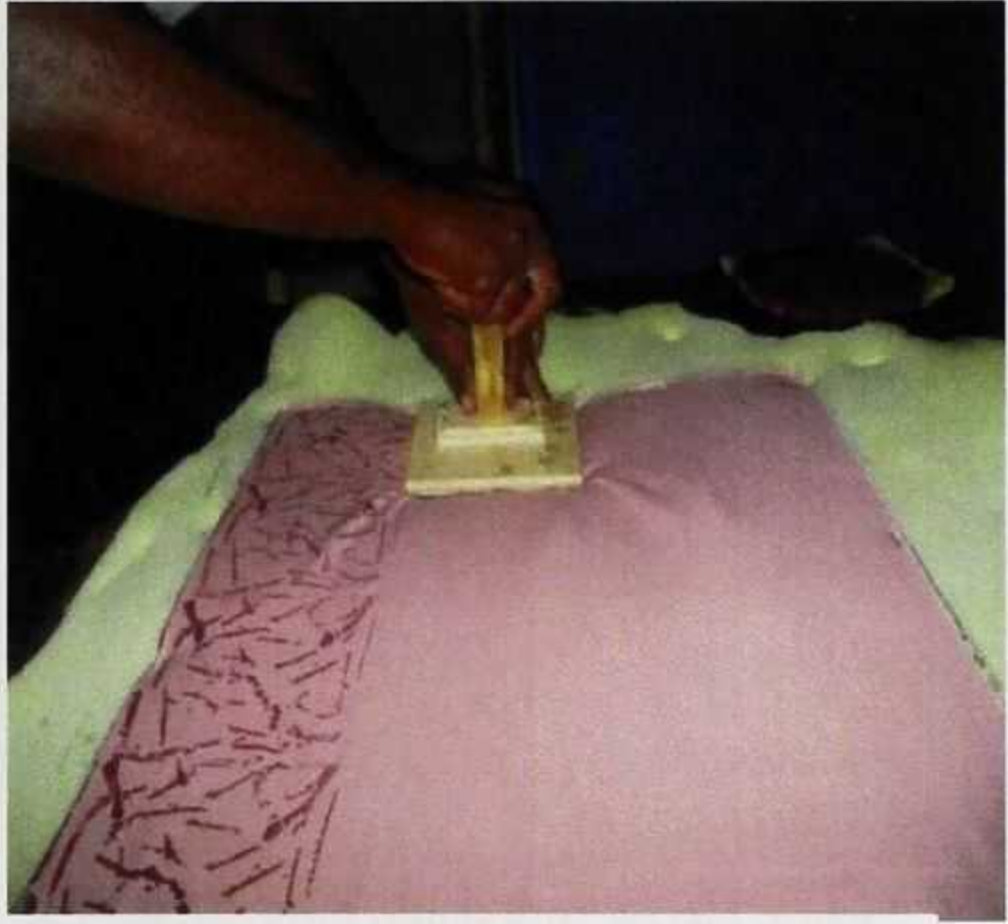


Plate 8: Printing with twigs block

It is relevant to indicate that the two colours were printed consecutively with the same block and the fabric was allowed some time to dry after the first colour whereas the block was also washed and dried to get it ready for printing the second colour. The fabric, which had a pink background, was printed in light purple and blue-black but its positioning on the fabric was varied with the different colours.

The print results after the first and second colours are shown in Plates 9 and 10.





Plate 9: Print result of first colour

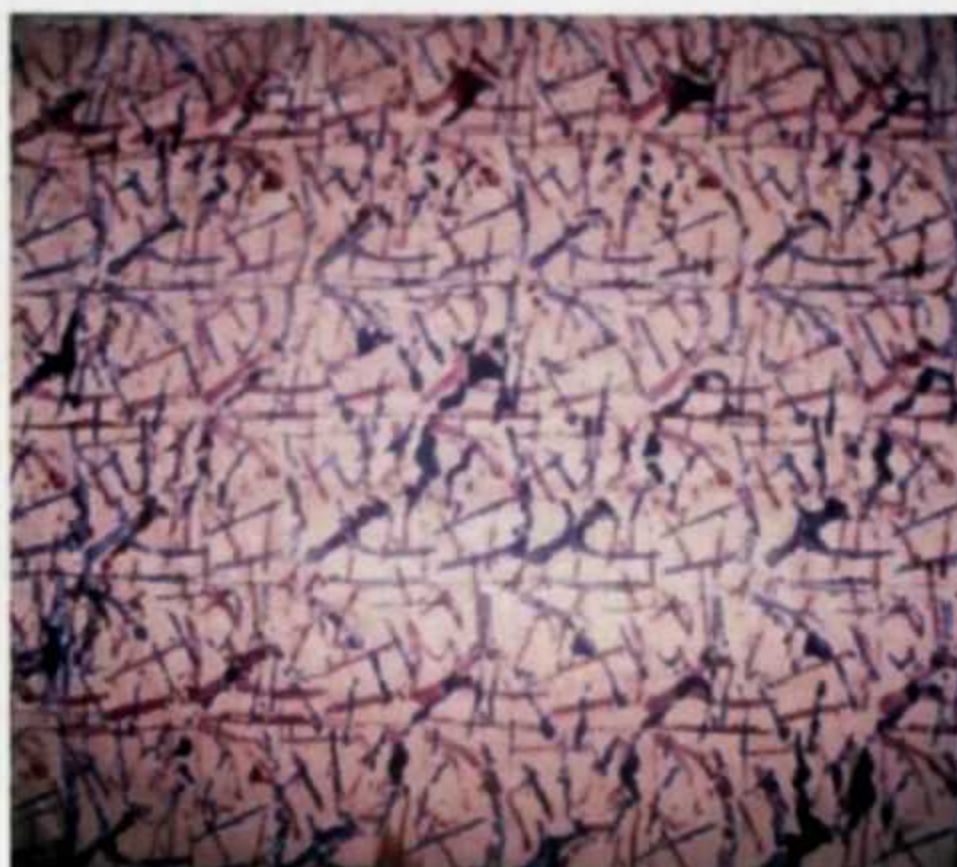


Plate 10: Print results after second colour

## 4.2 Techniques from Artificial Sources

This category refers to those techniques obtained by using man-made objects in the exploration process. Five techniques were achieved in this category, which are elaborated on in details below.

### 4.2.1 Marble Printing Technique

This technique was aimed at achieving the unrestrained effect of marble tie-dye in textile printing. The fabric sample was squeezed together on an appropriate printing surface in a preferred manner with both hands and an already developed screen with a marbled design was then placed over and printed with the aid of a squeegee using ordinary print paste. It is worth noting that in order to squeeze and maintain the fabric in such position for the printing, some little amount of water was sprinkled over the fabric in order to relax it. These procedures are shown in Plates 11 and 12.





Plate 11: Squeezing of fabric



Plate 12: Printing of squeezed fabric

As a norm in studio practice, the fabric was taken off the printing table after the first colour was printed and spread out to dry under a shade. Shown in Plate 13 (a) below is the printed result of the first colour (blue) and Plate 13 (b) is the result after printing the second colour (brown) over the blue:



(a)



(b)

Plate 13 (a & b): Printed fabrics from Marble Printing Technique

#### 4.2.2 Bottle (Acripuff/Acrilex) Printing Technique

This technique involves the use of already made acrylic paints in small squirt bottles to print directly on fabrics. The paint bottles have pointed tips with nostrils that make them convenient to regulate during the printing process. It is relevant to state that



although acrilex gives glittering effects and acripuff does not, they are nonetheless both acrylic paints and as such should be given similar treatment during printing. Shown in Plate 14 are the acrylic paints that were used in the printing.



Plate 14: Acripuff/Acrilex Paints

This technique was experimented on both cotton and linen during the printing process. Nonetheless, certain rules and precautions were observed among which includes; removing the cover of the bottle to reveal the inner pointed nip, which is then placed on the fabric and moved around in a preferred way while the bottle is pressed in accordance to the desired need for paste. In this technique, it is also advisable that one sketches the design first with pencil on the surface of the fabric and then follow the pencil marks with the bottle in order to avoid printing errors or at least reduces them to the barest minimum. The printing process elaborated in this discussion above can be seen in Plate 15 whereas the print result is shown in Plate 16.





Plate 15: Bottle (Acripuff/Acrilex) printing process



Plate 16: Printed fabric

#### 4.2.3 Brush Printing Technique

In carrying out this technique, the aim was to uncover the possibility of using ordinary washing brush to play the role of a wooden block in textile printing and the possible effects that it will give on the surface of a fabric. The processes of block printing were followed in printing the fabrics by placing the brush on a piece of cushion of one inch thickness with paste and stamping on the stretched fabric. This was after the brush had been stamped on the paste and pushed around the surface of the stretched fabric in a preferred manner to create lines, which served as background designs or textures. Plates 17 and 18 on the next page give a picture account of the processes being explained. They show the stamping process after the background was initially brushed over with green paste to create the background design as well as the printed fabric. The ordinary print paste was used in executing the print under this technique.





Plate 17: Brush Printing Technique



Plate 18: Brush printed fabric

#### 4.2.4 Lace Transfer Printing

This technique involves the application of print paste on the surface of a lace fabric and then immediately transferring it onto another fabric so that it takes the woven design structure of the lace material. In this process, the lace fabric was stretched and pinned into place on the printing table. Some portions of the lace fabric were cut with a pair of scissors and folded in a desired manner and stapled to create some interesting effects and alterations in the final print. A piece of foam was used to apply the print paste on the surface of the lace material. After printing this lace with the piece of foam, the fabric onto which it was to be transferred to was then placed on top of the printed lace, pin into place with a stapler and rolled over with the rolling pin. The fabric was then removed and dried after the transfer while the lace fabric with residue paste was also taken off from the printing table and washed off. It is very significant to wash off this excess print paste so that the ~~lace~~ material can be used later. These processes are shown in Plates 19 and 20.





Plate 19: Application of paste on lace



Plate 20: Rolling of fabric to effect transfer

The printed fabric was removed and dried under a shade after the rolling process, whereas the excess paste on the lace material was washed-off in its wet state and dried as well so that it can be reused if desired. The dried up fabric was then ironed for fixation and washed to get rid of any excess paste or stains that might be on the surface, which gave positive results.

#### 4.2.5 Fabric Painting Technique

The fabric painting technique as its name suggests is the application of print paste with sable or bristle brush on the surface of a fabric in a desired pattern. The normal processes in painting were followed. Thus, the colour was mixed in a palette and the lighter colour, which is the orange, was painted first and allowed to dry before the brown was painted. This is important since the brown could be used to correct (cover up) any errors that might have resulted in painting the orange. Plates 21 and 22 give a picture account of the painting processes of the fabric under this technique.





Plate 21: Painting of first colour



Plate 22: Painting of second colour

However, because the fabric was painted with acrylic paint, which usually takes a longer time in drying, the fabric was washed after a drying period of 72 hours to remove all excess paste and stains following the fixation process. Below in Plate 23 shows the printed fabric from this painting technique.

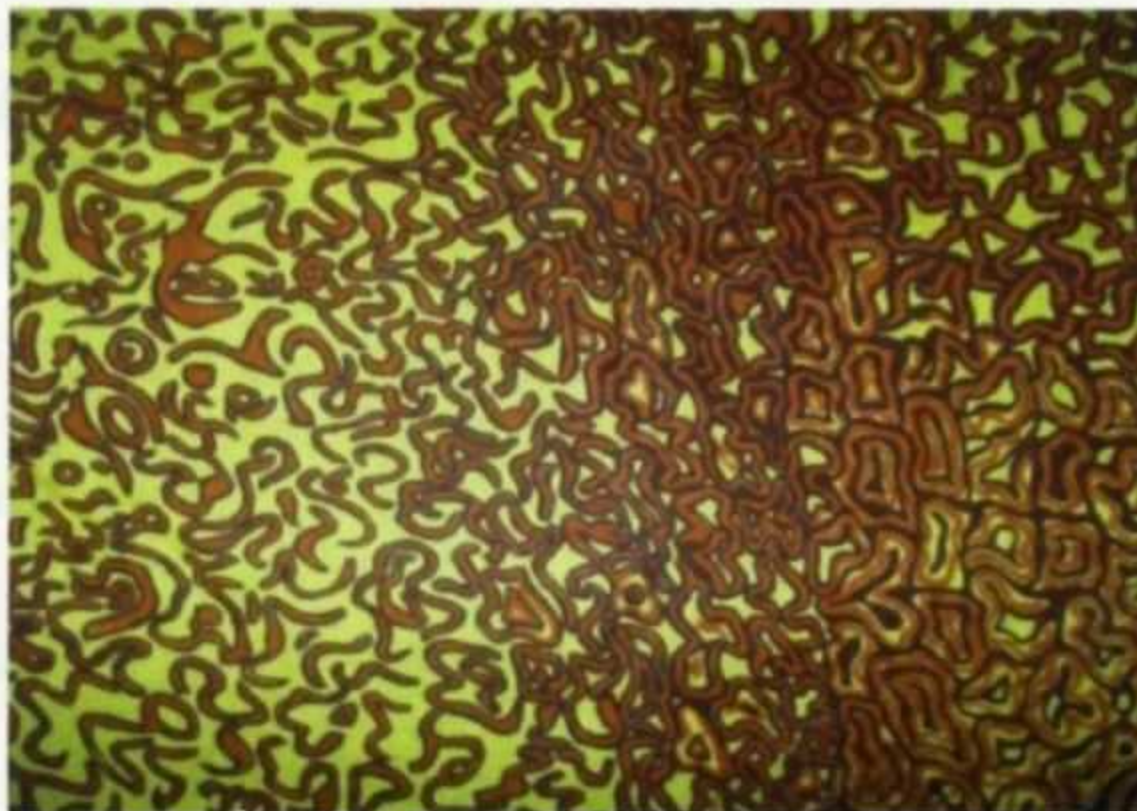


Plate 23: Brush Painted Fabric

The results after the washing were positive since all stains and dirt accumulated during the printing process were cleaned while retaining the print quality. However, this could not be compared to techniques such as screen and block printing which exerts more pressure on the fabric than this hand painting technique.



4.3 Techniques from Combined Sources

The combined source implies those techniques in which more than one technique was blended jointly or explored to achieve the intended results. Six techniques were explored under this section during the experimentation. These techniques are also explained consecutively below.

4.3.1 Sponge Transfer and Leaves Resist

In the exploration of this technique, a piece of nylon sponge was stretched and pinned on the printing table with a stapler. After this has been done, ordinary print paste was spread on a flat plastic lid and picked with a piece of foam and stamped on the stretched sponge. The piece of fabric was then placed over the printed surface of the sponge and the wooden rolling pin was then rolled over the back of the fabric to give a firm contact between it and the sponge to facilitate the transfer of the paste on the surface of the sponge to the fabric. The intention of the researcher in this technique was to transfer the knotted structure of the nylon sponge onto the surface of the fabric as textures. See Plates 24 and 25 on the next page which gave picture accounts of the processes explained above.



Plate 24 Stamping of paste on sponge



Plate 25: Rolling over fabric on sponge



After the transfer of the print from the sponge to the fabric which serves as textures, the dried fabric was for a second time stretched and printed over with screen with leaves placed on the surface of the fabric to resist some portions of it. The leaves were arranged in a desired pattern and stapled on the fabric while the screen with the marble design was placed over and printed. The leaves were then taken-off after drying the printed cloth. Plates 26 and 27 show the placement of the leaves as well as the printing process.



Plate 26: Placement of leaves on fabric



Plate 27: Printing over arranged leaves

Finally, as a normal practice in studio based textile printing, the dried fabric was then ironed at the reverse side for fixation and washed at a later date to remove all unwanted print paste and stains that may still be on the surface of the printed fabric. Plate 28 (a & b) shows the printed fabric from this technique with leaves and after the leaves were removed from the surface of the dried fabric.





(a)



(b)

Plate 28 (a and b): Printed fabrics from sponge transfer and leaves resist

#### 4.3.2 Marble Dyeing and Screen Printing

This technique as its name suggests is a blend of marble dyeing and screen printing. The aim of the researcher was to combine these two techniques and observe the outcome since these techniques are usually executed in isolation on fabrics. In this process, a piece of grey baft was first marble dyed in green and orange and then afterwards, the marbled design was screen printed in purple and orange as shown in Plates 29 and 30.



Plate 29: Marble dyed fabric



Plate 30: Printing on marble dyed fabric



During printing, both colours (purple & orange) were poured into the reservoir of the screen and printed on the fabric at the same time with the aid of a squeegee which intersected at various parts and produced other tertiary colours. The print result of this technique was good as can be seen in Plate 31. It is worth indicating that normal screen printing procedures were followed in achieving this print.



Plate 31: Marble dyed and screen printed fabric

#### 4.3.3 Twigs Block and Screen Printing

In this method, a number of twigs were gathered, cut into appropriate sizes and shapes and then glued onto a wooden block surface with white glue. The aim of this technique was to first experiment with the possibility of transferring the print paste onto a textile material with the twigs and secondly printing over with a screen to observe the result. It is important to add that because of the nature of the twigs, a first trial on the printing table could not give successful results because of the hard leather covering and as such, the table was padded with foam of half inch thickness. This therefore facilitated the process and the fabric printed successfully with the twigs. Plates 32 and 33 show the twigs glued onto the wooden block and the printing process.





Plate 32: Twigs block



Plate 33: Printing with twigs block fabric

After printing the first colour with the block, the fabric was allowed to dry and the second colour then printed with a screen, which contains a marbled design. This was also allowed to dry and the fabric ironed for fixation of the colour. In this technique, the screen was placed at an angle to begin the printing process so that the printed design fell diagonally on the fabric. In a nutshell, the marbled design was superimposed on the twigs block print. The printing process and printed fabric of the technique explained above is shown in Plates 34 and 35.



Plate 34: Printing over twigs design



Plate 35: Twigs and Screen printed fabric



It is important to indicate that ironing should be done at the reverse side and the fabric must be damp so as to prevent it from sticking to the plate of the iron.

#### 4.3.4 Lace Transfer and Marble Dyeing Technique

This technique involved the combination of marble dyeing technique and transfer of a woven lace design onto a piece of fabric. In exploring this technique, the piece of material was first dyed in green and yellow with vat dyes using the marble tie-dye technique. Subsequently, a piece of lace fabric was also printed with ordinary print paste using a piece of foam and then transferred onto the marbled dyed fabric using similar procedures as explained earlier under lace transfer printing and sponge transfer. Shown in Plates 36 and 37 are photographic accounts of the above processes explained.



Plate 36: Application of paste on lace fabric



Plate 37: Transferring of print on to marbled fabric

After the rolling process to effect the transfer, the two pieces of fabric were then removed. The transferred one was dried under room temperature whereas the excess paste on the lace fabric was washed off and the material dried so that it can be used again if there is the need. The print result of this technique explained above is shown in Plate 38.





Plate 38: Transfer printed fabric

#### 4.3.5 Spray-Stencil Printing Technique

The technique of stencil printing was also combined with spraying in this experiment with the intention of assessing their possibilities on apparel fabrics. This is because, these techniques are mostly used in producing works such as banners, posters and labels. Various shapes were cut-out on a piece of paper to form a stencil, which was placed on the stretched fabric and printed with the aid of a piece of foam used in picking the print paste. In this technique, it is advisable that the print paste should be in a viscous state so that it can be spread on a flat surface in order to pick it evenly with the piece of foam. This was done after spraying the background in orange with the pesticide hand pump to give some textures to the fabric. Shown in Plate 39 is the spraying process whereas Plate 40 below also shows the printing of the motifs in brown print paste.





Plate 39: Spraying of fabric



Plate 40: Stencil printing of sprayed fabric

It is worth noting that once this type of printing is manual, some time period was allowed for drying under a well-ventilated shade after printing the first colour. It must be protected from direct sunlight since it has the tendency of fading the colour. The fabric was then removed from the printing table and dried outside under a shade once again after the second colour was printed. Plate 41 below shows the printed fabric from this technique.

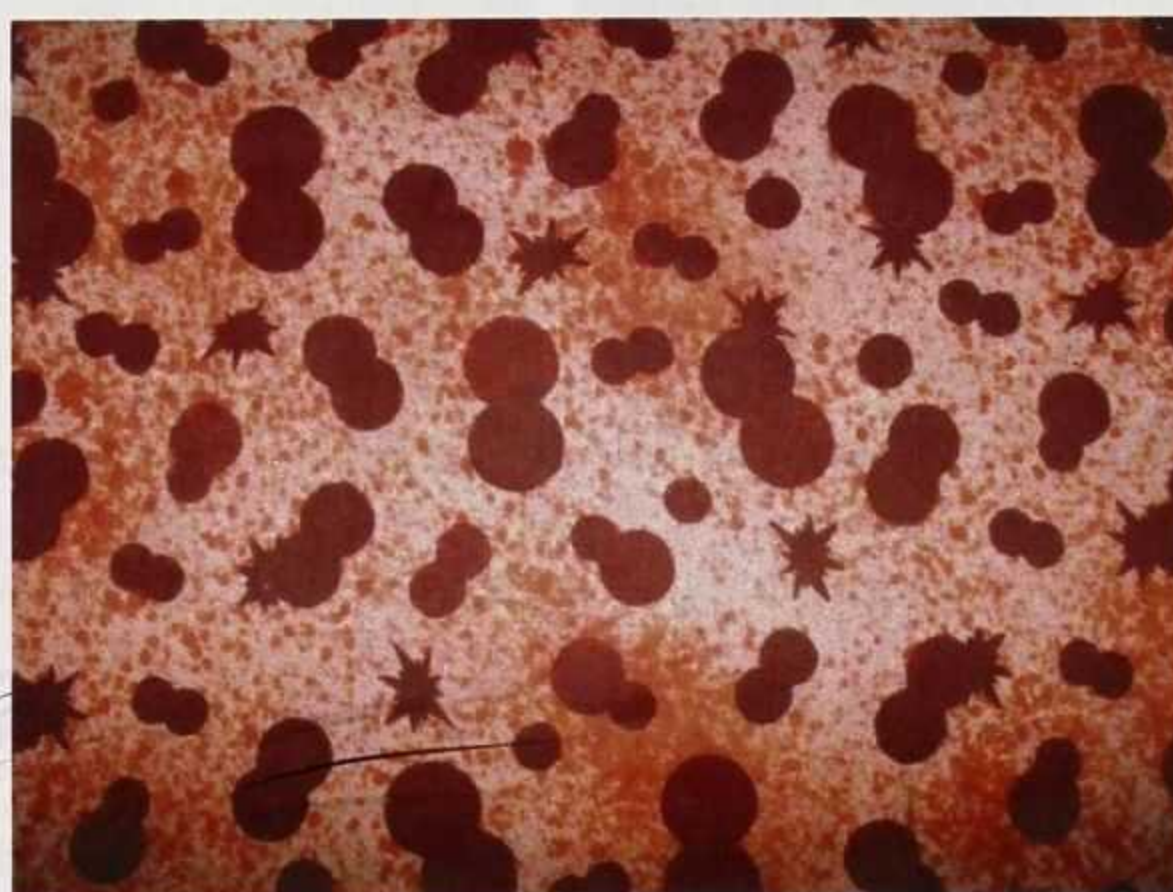


Plate 41: Printed fabric from spraying and stencil technique



#### 4.3.6 Bottle and Transfer Printing

The technique involved a blend of bottle and transfer printing techniques. In this process, the plain fabric was first printed with print paste in a squeeze bottle. The spout was gently cut to the desired shape and size. The print paste was diluted to the right consistency, poured into the bottle and the lid fixed back and used for the printing process. During printing, the spout was placed on the surface of the stretched fabric on the printing table and then squeezed to deliver the contents. The squeeze bottle therefore was used as a drawing tool to print out the design in the manner wanted. The bottle printing process and the printed fabric are shown in Plates 42 and 43.



Plate 42: Bottle printing process



Plate 43: Bottle printed fabric

After printing the fabric with bottle, it was allowed to dry and the design to be transferred was then printed on the transfer paper ready for the process. In transferring the design from the paper onto the fabric, the paper was placed face down on the fabric while an electric iron was plugged to the power source and ironed at the back of the paper as shown in Plates 44 and 45.



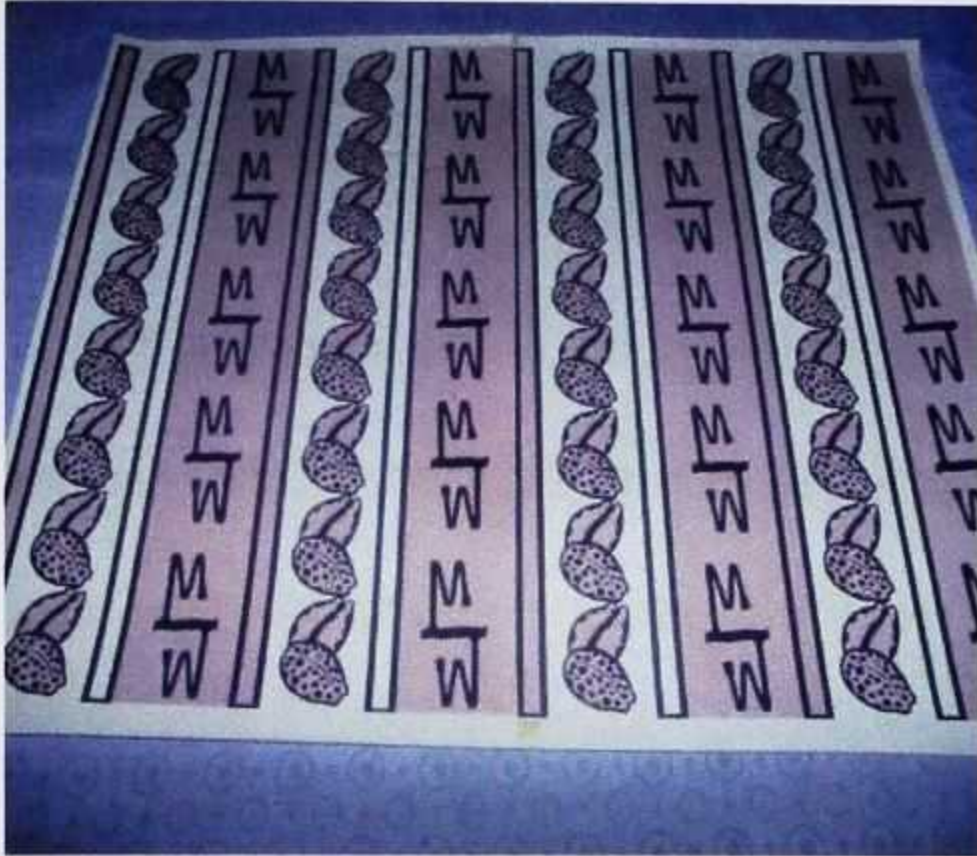


Plate 44: Design on transfer paper



Plate 45: Ironing to effect transfer

After ironing for about a minute, the paper was then peeled off when still hot since it is normally difficult to remove when cool. Shown in Plates 46 and 47 is the peeling off of the paper and the transferred design on the fabric.



Plate 46: Paper being peeled-off



Plate 47: Transferred design on fabric

It is believed that every art piece must serve both a functional and aesthetic purpose. The researcher has therefore not only taken the challenge in identifying these novel textile printing techniques in order to add value to print fabrics produced by Ghanaian small scale textile printers, but to also reaffirm this statement. The research results



discussed in this chapter therefore demonstrated that they have the capability of introducing a new trend among Ghanaian studio textile practitioners.

It clearly shows that if the existing textile printing techniques are properly blended or varied, they could give interesting results in textile printing that could provide very pleasing print fabrics to the consumer and boost patronage.

Besides this, it could be concluded from the research that certain unfamiliar techniques, if well embraced and executed in textile printing such as spraying, painting, bottle printing, sponge transfer and brush printing, could generate interesting print patterns on fabrics.

#### 5.1 Design Development

The results of the research showed that the existing textile printing techniques are being used in a variety of ways. Some of the techniques used are spraying, painting, bottle printing, sponge transfer and brush printing. These techniques were used to create a variety of print patterns on fabrics. The results of the research showed that the existing textile printing techniques are being used in a variety of ways. Some of the techniques used are spraying, painting, bottle printing, sponge transfer and brush printing. These techniques were used to create a variety of print patterns on fabrics.

#### 5.1.1 Spraying Technique

In Plate 48, a sample of fabric created using the spraying technique is shown. The design is a simple geometric pattern consisting of a series of parallel lines. The lines are created by spraying a mixture of ink and water onto a piece of fabric. The spraying technique is a simple and easy way to create a variety of print patterns on fabrics.

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## **CHAPTER FIVE**

### **DISCUSSION OF RESULTS AND APPRECIATION OF PRINTS**

This chapter of the project deals with the description of the results that were obtained by the researcher in the studio exploration process of the various printing techniques. The researcher categorized the techniques under three major headings namely; techniques from plant sources, techniques from artificial sources and combined (or blended) techniques. Five techniques were therefore explored under each of these three major headings. The print results obtained indicated that these techniques could be adopted to improve the current state of the Ghanaian print textile industry.

#### **5.1 Designs from Plant Sources**

The results discussed under this category included those that were obtained by using natural objects of plant base such as leaves, flowers, grasses, local sponge and wood. These results which were three in number were well discussed with the printed fabrics appreciated below:

##### **5.1.1 Spray Printing Technique**

In Plate 48 is the printed fabric resulting from the spray printing technique. The design in this fabric, which has orange as its ground colour, is printed in two colours; brown and purple with the aid of the hand spray pump. The exposed areas of the fabric were printed in brown and purple while the areas that were covered with the flowers, grasses and leaves revealed the orange background colour. These flowers, grasses and leaves served as the motifs of the print and the tiny dots from the hand spray pump served as textures. The fabric gives an interesting design with good aesthetic appeal in how the grasses and leaves criss-cross each other as well as the striking blend of the two sprayed colours. In careful consideration of the interplay of the elements and principles



of design in this print, the researcher is of the view that the fabric would be best suited for formal wear apparel for women because of the floral motifs and the bright orange colour since such colours and flowers are mostly attracted to females.



Plate 48: Fabric printed from spraying technique



### 5.1.2 Sponge Block and Broomsticks Technique

The print in Plate 49 is the result of the local sponge block and broomsticks printing technique. The semi-circular shapes, which serve as the motifs are printed in brown and dark green and takes the shape of the sponge block whereas the cross hatches that serve as the textures were printed with two broomsticks held together. The layout format and colour scheme of the print create comfort to the viewer, the motifs and textures as well as the colours also relate well to one another. This fabric would be appropriate for a mummy cloth because of the shape of the motifs, textures and dark colours.

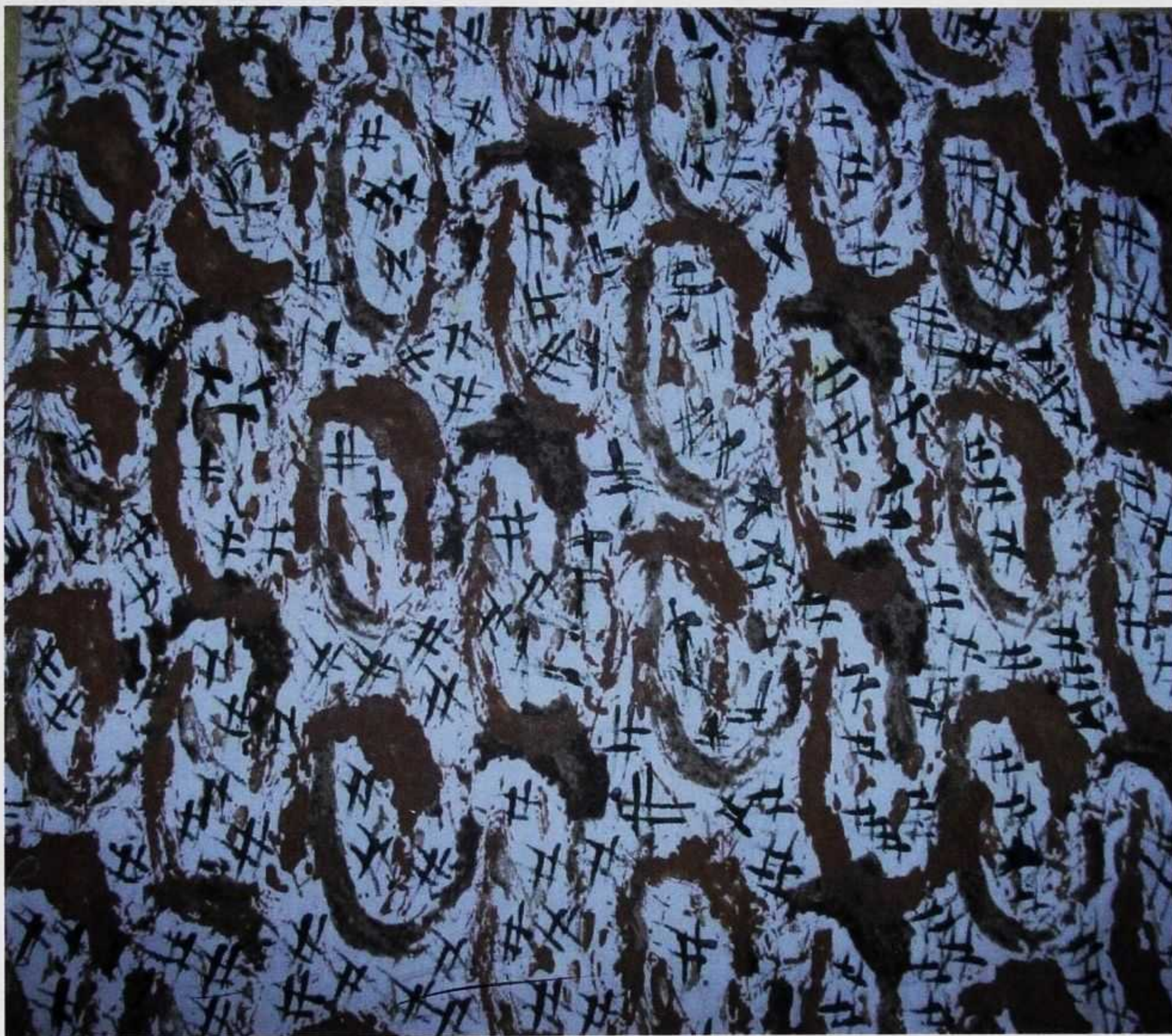


Plate 49: Printed fabric from sponge block and broomsticks technique



### 5.1.3 Twigs Block Printing

Shown in Plate 50 is the printed fabric from the twigs block printing technique. The print, which is a two-colour work, is printed in light purple and blue-black on its pink background. The two colours were printed in an overlapped manner by shifting the position of the block slightly so that the second colour falls over the first. The design has no textures since the uneven shapes and sizes of the twigs equally serve that purpose. This gives the fabric a great aesthetic appeal and makes it pleasing to the visual senses of the viewer. The fabric, in the researcher's opinion, would be appropriate for both male and female apparel. This is because the colours and motifs of the print would suit both gender groups.

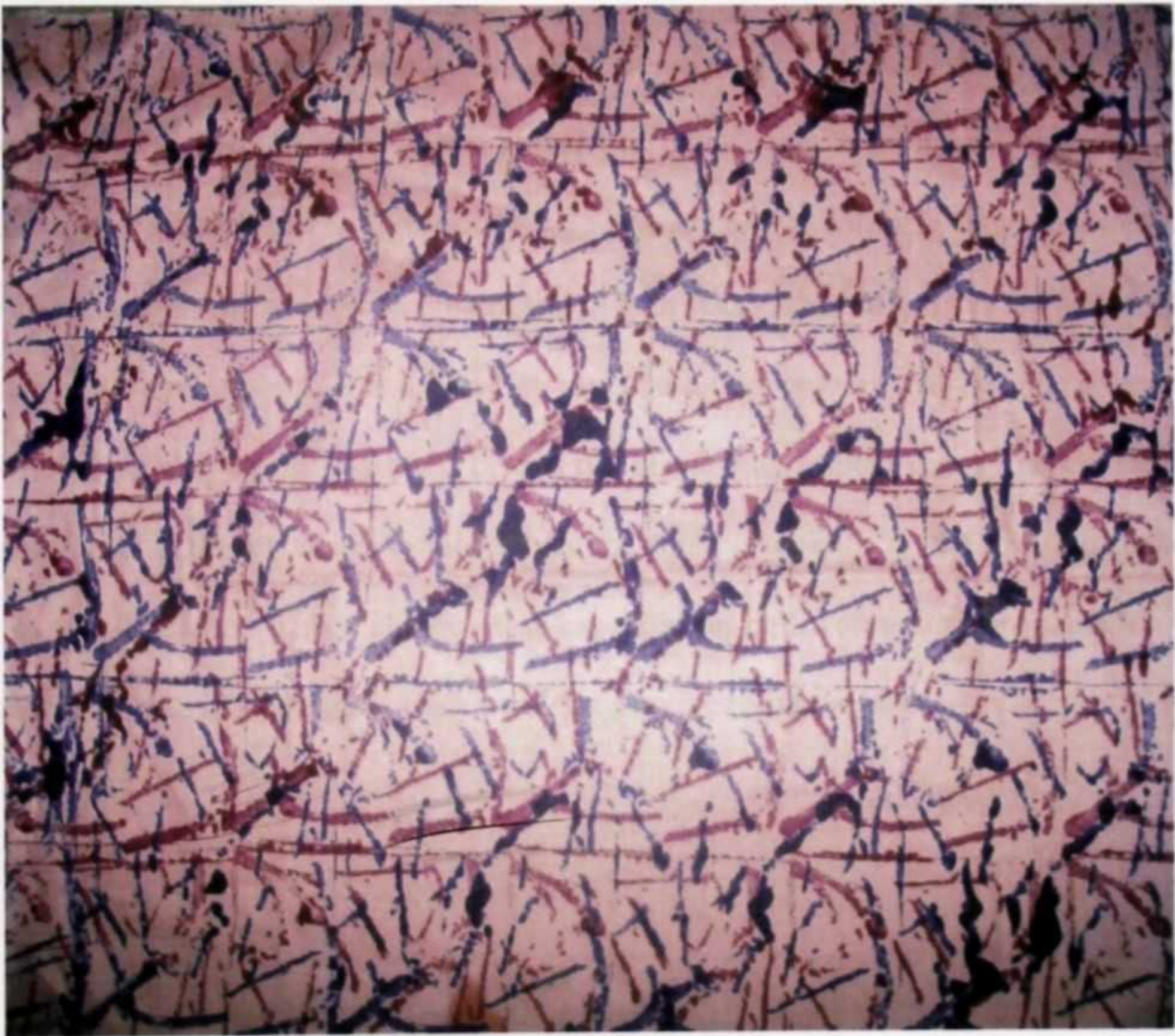


Plate 50: Printed fabric from twigs block



## 5.2 Designs from Artificial Sources

This category refers to the discussion of results obtained by using man-made objects in the exploration process as well as an appreciation of the printed fabrics. Five printed fabrics were achieved under this category by employing these techniques.

### 5.2.1 Marble Printing Technique

The design produced using the marble printing technique is shown in Plate 51. The fabric, which has a light green background, is printed in blue and brown colours in a marbled style with the colours blending and overlapping each other at various angles. However, some portions were left plain because of the folds that were created before the fabric was printed over. The aim of the researcher was to incorporate the aesthetic effects of marble dyeing in textile printing with print paste. The design though printed, therefore had an appearance similar to marble tie-dye and as such, the exact design cannot be repeated and is appropriate for apparel designs for both men and women since the colours and design pattern appeal to both sexes. This design has neither motifs nor background textures. It is a blend of blue and brown colours that take the shape of the folds created in the marbling before the fabric was printed over. The choice of colour is to a greater extent influenced by the trend of colours in the local Ghanaian print textile market. This technique was executed on both cotton and linen fabrics to assess their rate of absorption, which yielded positive results in both cases.





Plate 51: Printed fabric from marble printing technique

### 5.2.2 Bottle Printing Technique

The printed fabric produced by employing this technique is shown in Plate 52. The fabric was printed with acrylic base printing paste in four colours, viz., blue, green, silver and gold on a yellow background. The gold and silver colours give the glittering effects whereas the green and blue do not. The fabric is printed by making irregular lines of various sizes in an all-over pattern with the colours crossing each other at several angles which give a fascinating appeal to the visual senses. This design has no background textures since the nature of the lines (motifs) do not necessitate that and as such the use of textures would have created congestion in the print. In the researcher's opinion, the fabric would be appropriate for women apparel because of the bright colours in the design.



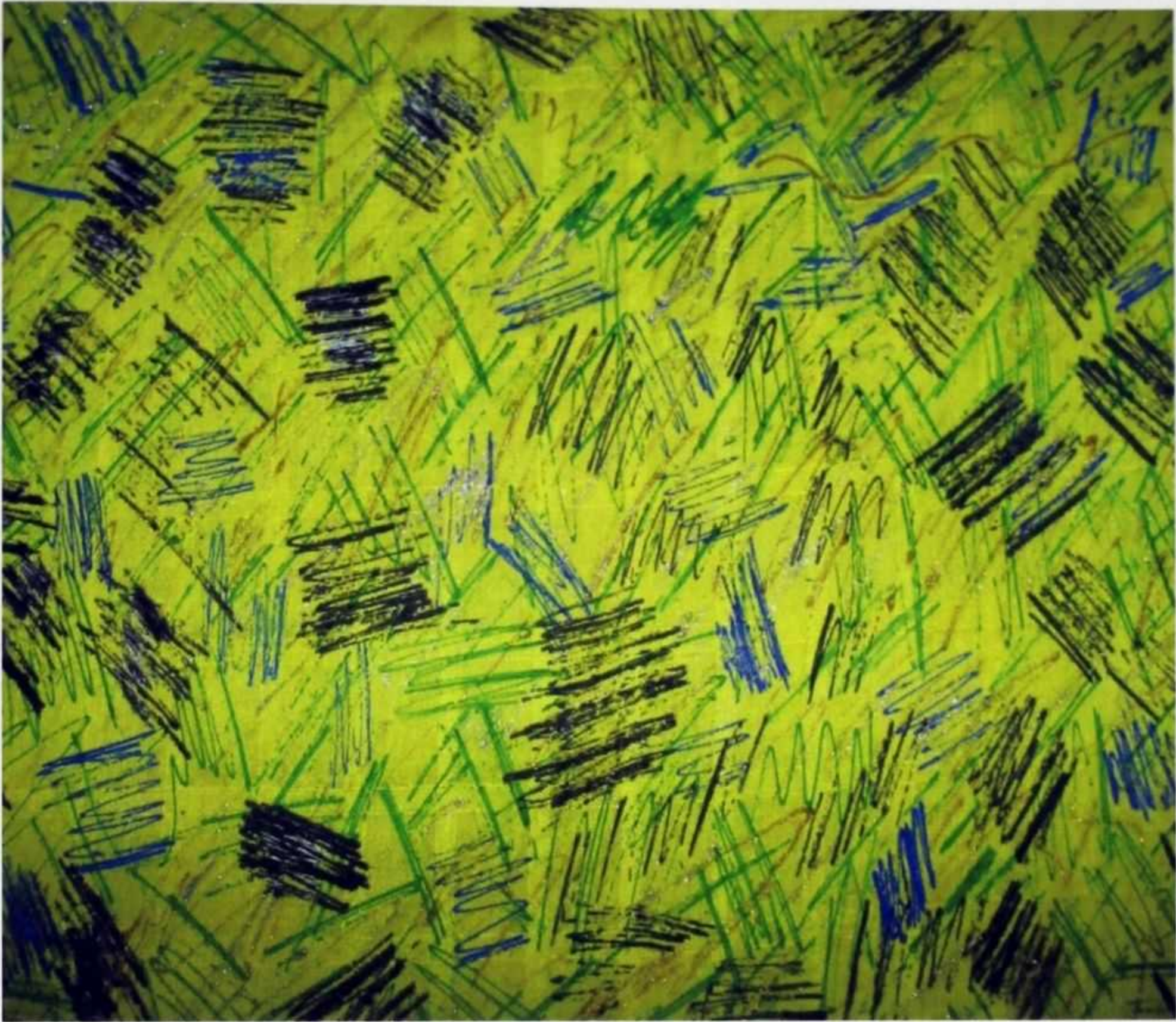


Plate 52: Printed fabric using bottle (acripuff/acrilex) printing technique

### 5.2.3 Brush Printing Technique

Plate 53 shows the printed fabric that was produced by employing the brush printing technique. The ground colour of the fabric is pale green whilst the printed colours are army green and a dark or shade of green. The fabric has uneven lines that cross each other at different angles and serve as the textures of the fabric whereas the brush marks stamped on the surface are the motifs. The fabric is calm and pleasing to the viewer as a result of the different shades of green that were used for the printing. This fabric can be said to be in monochrome since all the three colours in it have a common hue. In the researcher's opinion, this print would be good for women apparel because of the affection they have for green and curved lines.





Plate 54: Printed fabric from brush printing technique

#### 5.2.4 Lace Transfer Printing

Shown in Plate 55 is the printed fabric from the lace transfer technique. This experiment which, was aimed at finding the possibility of manually transferring a weave structure from a material (lace) onto another fabric was successful. The printed fabric which is in shades of brown gives the print a comfortable view as the ground colour and the printed one has a common hue. The print result shows the floral designs and tiny textures that were transferred from the lace fabric. It gives a replica of the lace weave structure in print on the transferred fabric. This print is also pleasing to the eye as a result of the colour blend in it and can also be regarded as a monochrome print as the one in Plate 54. The print would be appropriate for women apparel and furnishing because of the floral motifs which women mostly have preference for.



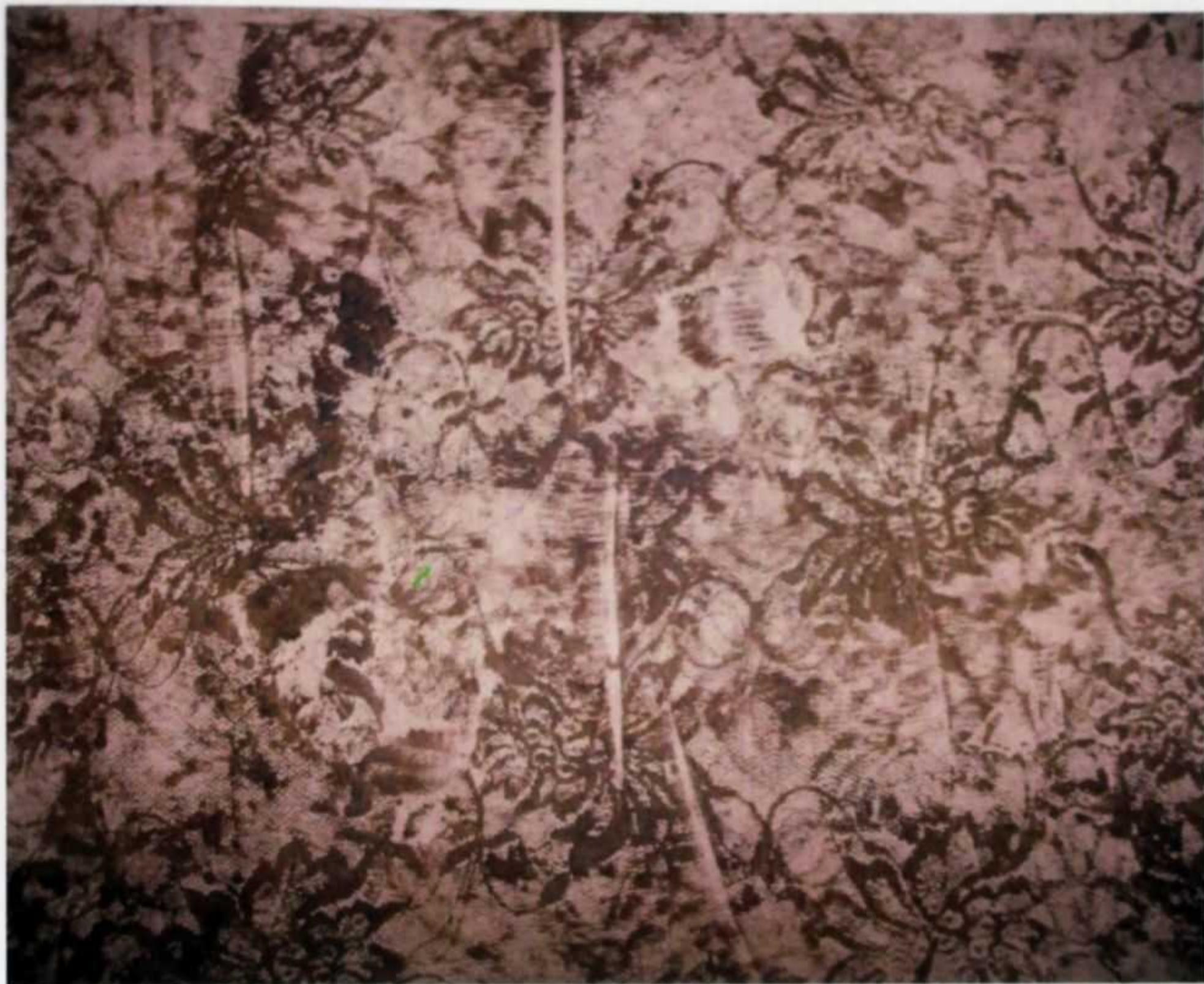


Plate 55: Lace transferred fabric

#### 5.2.5 Fabric Painting Technique

Plate 56 shows the printed fabric from the painting technique. The fabric, which has yellow as its ground colour was printed in orange and brown. The orange was painted and allowed to dry after which the brown was also painted. The use of these related colours created the artistic principle of harmony in the print and as such makes it very pleasing to the visual senses. The painting of the brown after the orange also gives the advantage of being able to correct unwanted brush strokes that might occur at some portions. The layout of the design also adds up to its aesthetic appeal. This print would be best suited for men apparel because of the uneven nature of the design and the manner the three warm colours in it blend with one another.



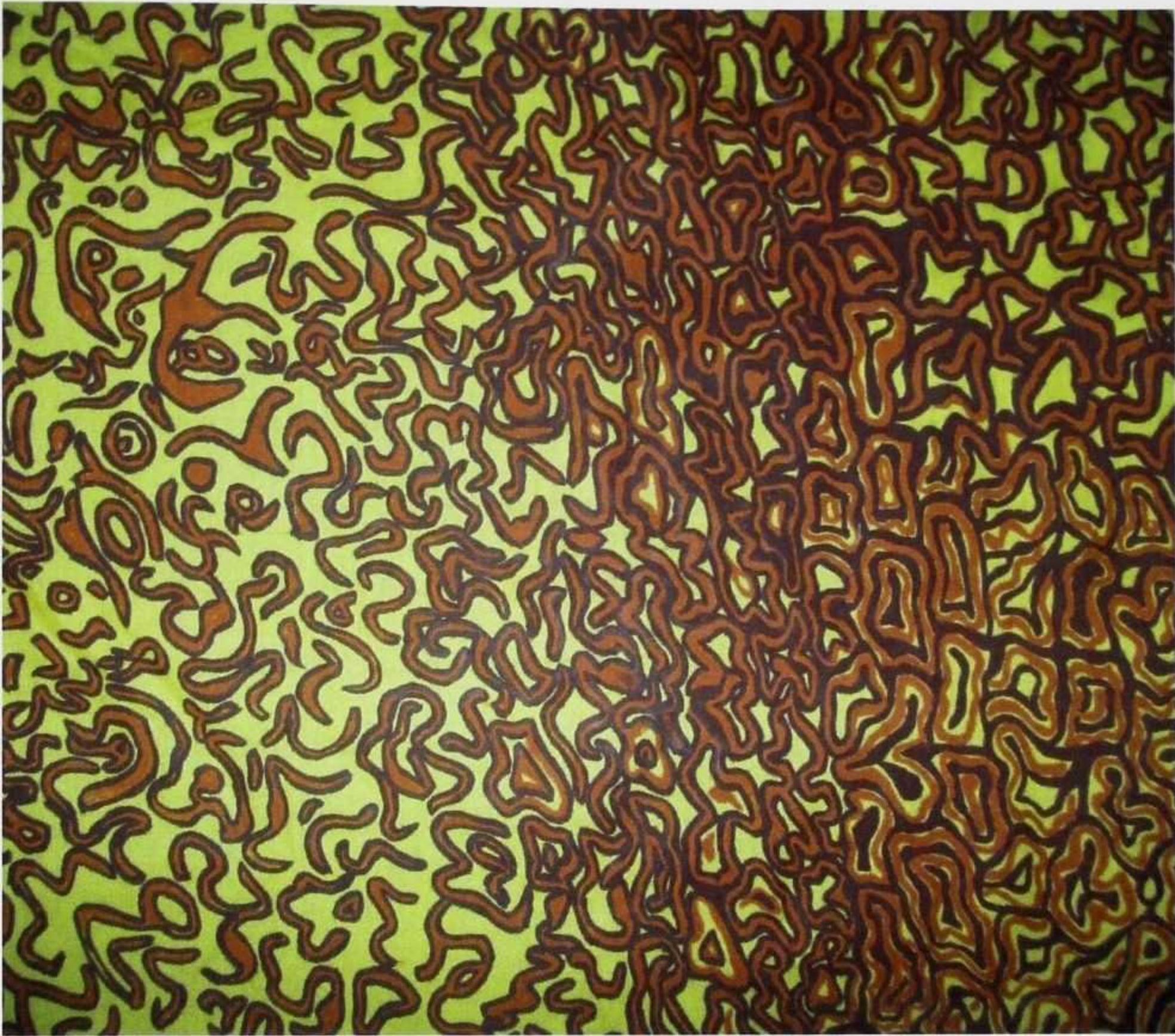


Plate 56: Hand painted fabric

### 5.3 Designs from Combined Sources

This category deals with discussion of the results that were obtained by employing more than one technique. Under this group, two techniques were blended jointly or merged to achieve the intended results. Six print results which were produced under this section during the experimentation are therefore discussed and appreciated sequentially below.



### 5.3.1 Sponge Transfer and Leaves Resist Technique

Plate 57 shows the printed fabric produced using the sponge transfer and leaves resist technique. The fabric, which has yellow as its ground colour was printed in two colours; brown and red and has no layout pattern since it is a marble design. The brown is the colour used for the textures and was sponge transferred whereas the red which is the colour of the motifs was screen printed with leaves arranged underneath to resist some portions of the fabric. The design in this print is harmonized in the way the various elements of design come to play. Especially, the unity between the red and brown as they possess a common hue that helps give the printed fabric an intriguing appearance. It is worth indicating that the choice of colour is greatly influenced by the kind of colours usually found in Ghanaian print textiles and in the researchers view would be best suited for apparel for elderly women since the print is similar to a mummy cloth.

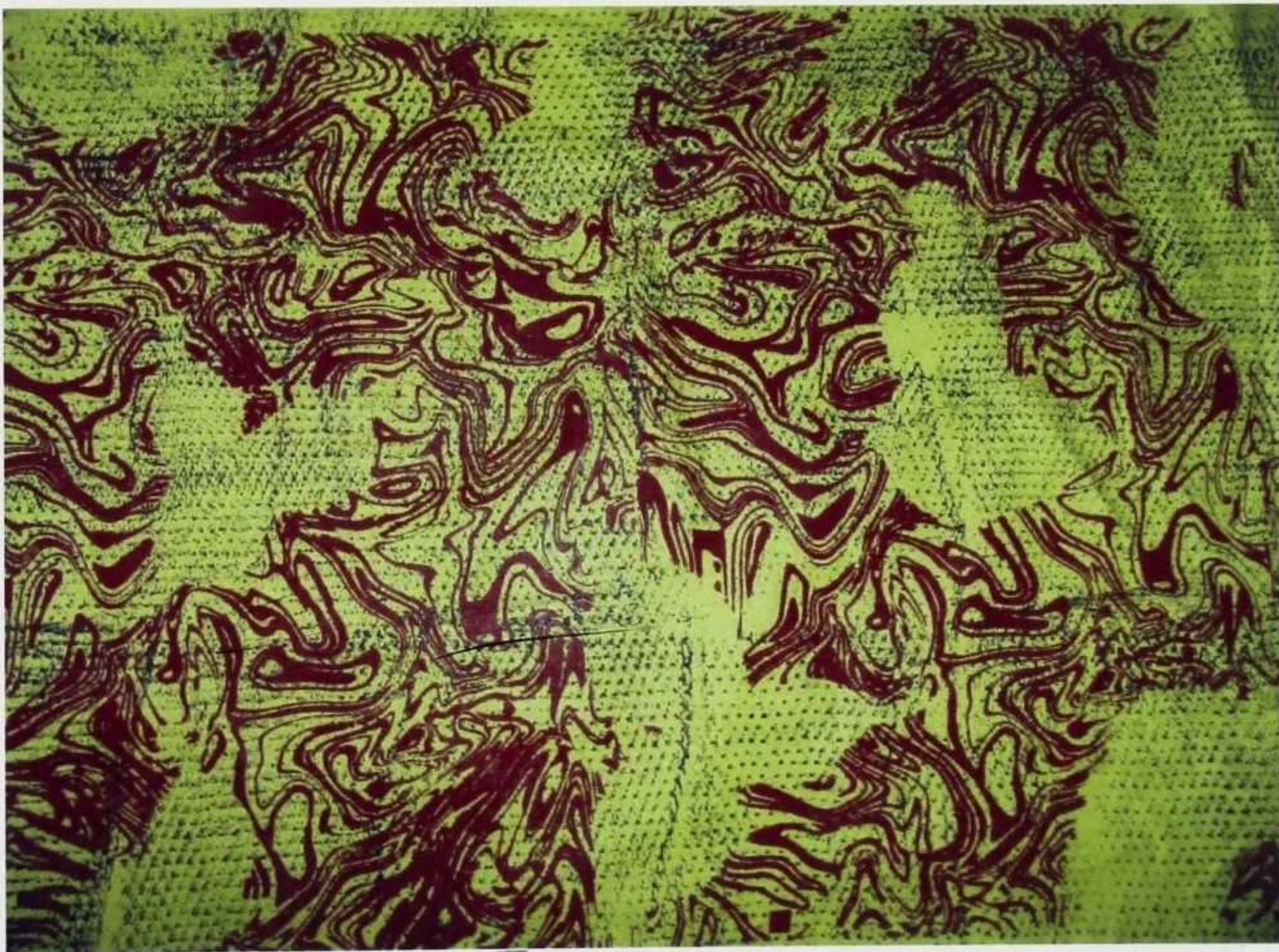


Plate 57: Sponge transfer and leaves resist printed fabric



### 5.3.2 Marble Dyeing and Screen Printing Technique

Plate 58 shows the printed fabric from the blended technique of marble dyeing and screen printing. The plain fabric was dyed in green and orange using the marble dyeing method and thereafter printed on with a marble design developed on a screen. The design is composed of continuously moving lines in several directions with thick and thin portions. It was printed in purple and red-orange and both colours of the paste were poured and pushed through the screen at the same time with the squeegee. The results of this blend of techniques were very intriguing as can be seen in the way the colours blend and overlap one another. It is important to bring to the fore that because the purple and red-orange were screen printed at the same time, they blended with each other at certain points to produce further colours on the fabric, which adds up to its aesthetic qualities. This print would be appropriate for both men and women apparel since the colour pattern and design suit the preference of both sexes.



Plate 58: Printed fabric from marble dyeing and marble printing technique



### 5.3.3 Twigs Block and Screen Printing

The printed fabric from this combined technique is shown in Plate 59. It is printed in green and violet on a blue background with the green taking the shapes of the twigs whilst the purple is printed with the wooden screen in a marbled design. This marble design serves as the motif of the print whilst the twigs serve as textures. The choice of colours were in consideration with the colour trends of the local print textile market and reflected the principle of harmony in the design as the colours and other elements related well with each other. This therefore makes the design appealing to the viewer and the researcher's opinion the print would be appropriate for apparel for both men and women as it fits the colour and design preference of both.

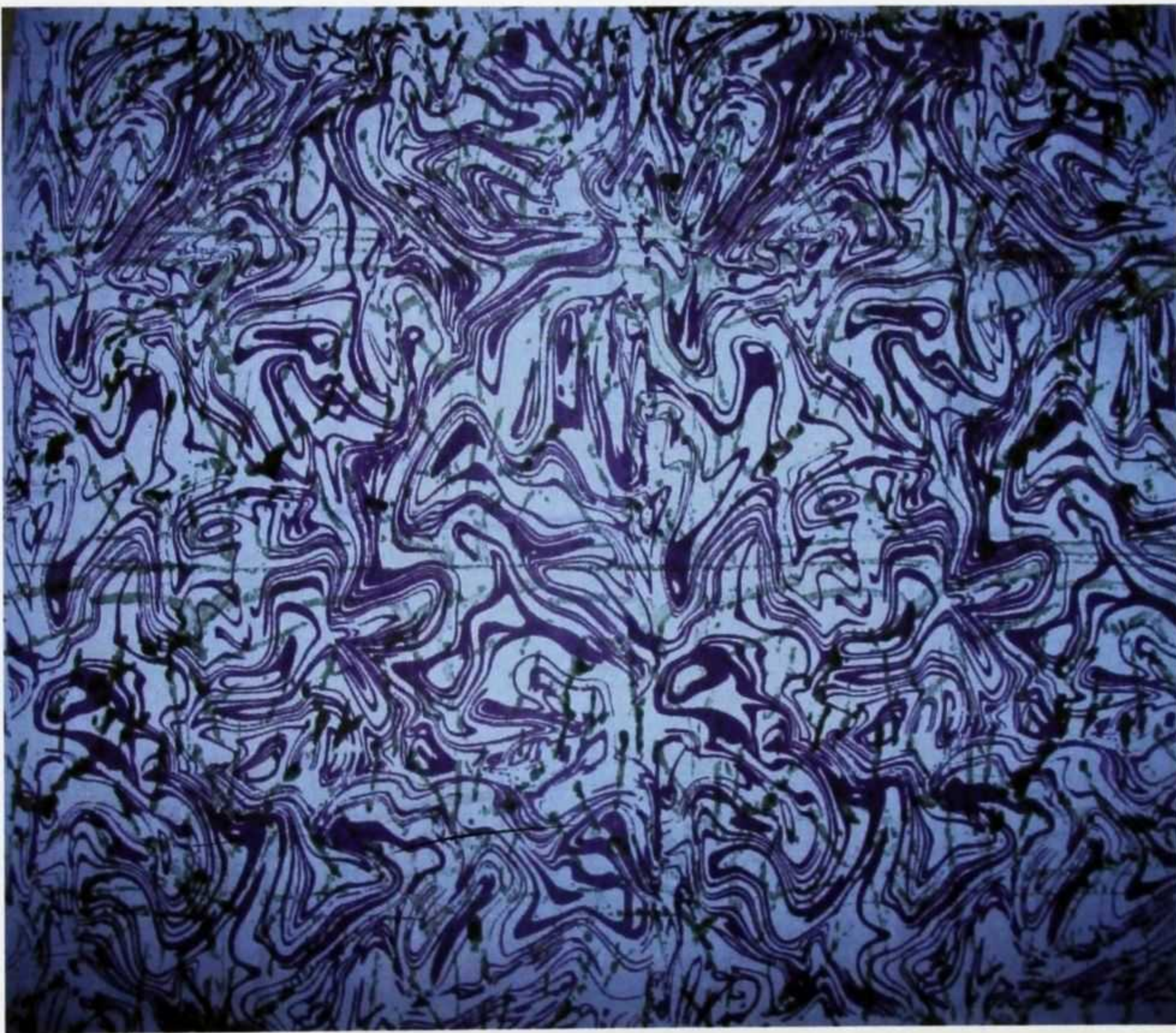


Plate 59: Printed fabric from Twigs block and Screen printing technique



#### 5.3.4 Lace Transfer and Marble Dyeing

Plate 60 is also a print from the combined technique of lace transfer & marble dyeing. The print is in three colours namely purple, green and yellow. The yellow and green were marble dyed whereas the purple was lace transferred onto the fabric after the dyeing process. The print which is made of floral designs transferred from the lace fabric gives a good blend of colours especially the manner in which the dyed colours intersect thus making it very pleasant to the viewer. This print in the researcher's view would also be appropriate for apparel construction for women as well as home furnishings because of the floral motifs and colour scheme of the print which makes it suitable for such purposes.



Plate 60 Marble dyed and lace transferred fabric



### 5.3.5 Spray-Stencil Printing Technique

Shown in Plate 61 on the next page is the printed fabric of the spray-stencil technique. The type of fabric is mercerized cotton, which was dyed in pink. The fabric was printed in two colours with the motifs printed with the stencil in brown whereas that of the orange was sprayed over the surface of the fabric. The motifs of this print design consist of circular and abstract shapes of various sizes with some joint together whereas the textures are the tiny dots that were sprayed over. The all-over layout of this print gives it a harmonizing appeal and it can be considered as the right method of arrangement with regards to the nature of the motif. The technique though simple coupled with the all over layout, created interesting effects on the fabric that makes it appealing to the viewer and in the opinion of the researcher, such fabric could be appropriate for women apparel as well as home furnishings as a result of the motifs in the print. This print also has the principles of balance and emphasis in it as some portions of the fabric have compactly sprayed dots whereas other parts are loosely sprayed.



In the opinion of the researcher, this print would be best suited for home furnishing because of the nature of motives and colour pattern employed in the print which best fit such usage.



Plate 62 Bottle and Transfer printed fabric

The above textile prints were produced during the exploration process of the various techniques discussed above regarding the need to identify innovative ways of producing print textiles. In accomplishing this, the researcher adopted various approaches by exploring the techniques from three broad categories, which included natural, artificial and combined sources in some cases. These techniques enumerated above if adopted in printing textiles therefore could be well received and integrated among existing ones.



## 5.4 Artist's Statement of Thesis

According to Spirkin (2011), a crucial feature of art is its ability to express information in an evaluative manner. Art is a combination of man's intellectual and evaluative attitudes to reality recorded in colours, words, 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 thought.

Siber (2004) also explains that, an artist's statement is a short written piece accompanying an artefact that describes what one does as an artist. Artists' statements help communicate artists 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 gallery owners, museum curators, photo editors, art journals and the public.

Another characteristic of practice/studio-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 print samples produced are based on the artist's perception and comprehension of studio based printing in 21<sup>st</sup> century Ghana. The artist is of the notion that, the value given to the meaning of an artefact transcends the value relatively given to its aesthetics and functionality. Even though some art works are produced to be useful, this study produces print fabrics that satisfy both aesthetical and functional purposes and moreover communicate the relationship between the artist and his work. The statement below tells the concept and motivation of the artist about the hand printed fabrics.

### Exploration in Textile Printing; a Pedagogue of Life & Creativity

"The artist is a receptacle for ~~emotions~~ that come from all over the place; from the sky, from the earth, from a scrap of paper, from a passing shape, from a spider's web." - Pablo Picasso.

Textile printing in the researcher's opinion is a learning pathway of the daily issues of human life as well as a means of provoking innovation; an activity that inculcate human values in the individual. Making an impression with paste or other media on the surface of a textile substrate is what is termed printing.



Working with the water and acrylic base print pastes on different kinds of fabrics such as cotton and linen to generate interesting print designs taught the need for unity of purpose or togetherness, since the created designs are the results of the aesthetic convergence of the various artistic media. As an artist, printing teaches self-discipline, patience, fortitude, tolerance, persistence, courage and probity. This is because printing faults; such as overlaps, gaps, among others if not rectified could cause greater problems and yield poor results. This means that life on earth is a problem solving one and requires patience and perseverance. The use of unconventional tools in printing like washing brush, hand sprayer, twigs block, artists' brushes and squeeze bottles also pose difficulties and demand rigorous thinking for possible alternatives to solve, hence improving my individual creative abilities; which further justifies Brian Eno's statement that "What is thinkable in life becomes possible in art".

Paste overflow, resistance of paste and poor wash fastness suggest the inefficiencies in humans whereas proper penetration of paste, good fixation of paste and good wash fastness are synonymous to man's capabilities. The ability to correct these obstacles is indicative of our possibility to make amends.

It is understood therefore that, even though the conventional methods of printing have their own uniqueness in aesthetic value, the introduction of unconventional printing methods improves the creative abilities as an artist.

Samadu Kamwine

MFA Textile Design

24<sup>th</sup> August, 2013



## **CHAPTER SIX**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

This is the final chapter of the project, which gives a summary of the entire report and draws conclusions and recommendations to improve the situation and suggest new methods that could be considered for incorporation into the small scale Ghanaian print textile industry.

#### **6.1 Summary**

This studio based research project focuses on the exploration of novel techniques in printing textiles as a means of decorating them. The need for this project was thought out of the researcher's desire to solve the problem of low patronage for the most common roller, block, screen printed and dyed fabrics since most people, despite the desire to wear printed or dyed fabrics would rather prefer something different. The project has therefore outlined a number of ground-breaking techniques through studio experimentation to augment the existing ones currently used by small-scale textile printers, which these textile print manufacturers could adopt to satisfy the preferences of consumers. These techniques have been achieved by blending and varying existing techniques as well as exploring with different kinds of materials and tools. These include brushes, flowers, leaves, grasses, sponges, lace fabrics, bottles, squeegees and screens which were used in attaining the over ten printing techniques.

Sample fabrics were printed by employing the techniques of which some were sewn into garments for the final exhibition of this project.



## 6.2 Conclusion

The foremost aim of every artefact is its functional purpose. Nevertheless, this must move in tandem with its aesthetic qualities so that the said art piece would be better appreciated. Print fabrics are for that reason of no exception since aside their protective function they should add an aesthetic appeal to the individual or their immediate surroundings. It is based on this assertion that the researcher has taken the challenge and explored the above novel textile printing techniques that will add value to print fabrics produced by Ghanaian small scale textile printers. The research results discussed in the previous chapter indicate that they have the potentials of introducing a new trend among Ghanaian studio textile practitioners.

The study reveals that if the existing textile printing techniques are properly blended or varied, they could give interesting results in textile printing that could provide very pleasing print fabrics to the consumer and boost patronage.

Secondly, it could be concluded from the study that certain unconventional techniques if well adopted and properly executed in textile printing such as spraying, painting, bottle printing, sponge transfer and brush printing could generate interesting print patterns on fabrics.

Finally, the study also revealed the possibility of transferring a woven design from one piece of fabric especially lace material to another fabric with print paste. In this technique, special transfer papers are not required as normally the case in industrial transfer printing. Nevertheless, this research shows the need for further inquiry into exploring more techniques for textile printing since those identified in this thesis could only be used by studio based textile printers.



### 6.3 Recommendations

The following recommendations are made based on the findings and results gathered from the studio explorations conducted in generating the techniques for consideration.

1. The researcher recommends that, the teaching of idea exploration, generation and development be incorporated in all aspects of the textile programme including printing at senior high schools and technical institutions and way up the tertiary institutions in the country so as to enhance the level of creativity in students.
2. The National Board for Small Scale Industry in collaboration with the Ministry of Trade and Industry should reemphasize the National Friday Wear concept. A day where fabrics produced from these techniques could be worn to exhibit creativity and encourage small-scale printers.
3. Techniques such as squirt bottle printing, spraying, painting, twigs block and others should be adopted into the traditional textile printing techniques. This, in the researcher's view could provide several varied prints that could not be imitated by textile pirates.
4. Prints from these techniques should be employed by high class fashion designers in constructing apparel and home furnishings for the famous in society. Since this could motivate small-scale printers to come out with more techniques and better prints.



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