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Design and its Application in Ceramics and Textiles: Similarities and Divergences

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Abstract:

Design is an intended arrangement of materials to produce a certain result or effect on man-made objects for various uses. This is done with the correct application of the elements and principles of design in an organized manner. Ceramics and Textiles are areas of industrial design that focus on effective use of motifs in different forms for aesthetic and utilitarian purposes appreciated by the users. Both serve as reserve for the cultural heritage of a people and have economic, political, social, religious and utilitarian value in the society. The basic raw materials for ceramic wares is clay while that of textile fabrics is fibre, either natural or man-made or a combination of both. This brings us to where both have divergences, but they meet at a point where design comes to play. Hence, this paper is an attempt to discuss and document design and its application in Ceramics and Textiles, defining areas of similarities and divergences. Areas covered are materials, method of design application and uses of both, with examples from photographs and sketches. Our primary sources of data collection are books, catalogues and photographs taken from physical examples of some art works. This research in its findings concluded that there are similarities and divergences in design and its application on ceramics and textiles. These have been documented in this paper for further academic work by researchers in Libraries, Museums and Galleries.

Keywords: Design, application, ceramics, textiles, similarities, divergences

1. Introduction

Design is an ordered organization or arrangement of certain elements and principles to create motifs, symbols and images to communicate an idea. These include, line, shape, texture, colour, space, balance, rhythm and proportion. The outcome of such arrangement creates design which is a representation of ideas. The history of design is global and interconnected between cultures both western and non-western in the various areas of Fine and Industrial Arts. Designs were first created then handcrafted to satisfy man's immediate needs from the creation of man, before the emergence of the industrial revolution and digital technology. Thus design spreads through the rich legacy of craft production, the creative use of natural materials and newer ones that have emerged as a result of industrial or digital technology. It revolves around an artificial and often contested duality between artists and artisan within western tradition of the visual arts, expanding market for the products of design and the phenomenon of reform and standards as they attempt to regulate and inform a particular market.

Design, from its definition is related to every facet of life and human existence. It spreads across automobile and tools, software information, painting, ceramics, textiles, sculpture, array of household products, machines and equipments, books, posters and magazines. Design exist and is regularly mentioned to describe some of the most common aspects of man's everyday experience. Every individual in one form or the other uses a designed product at home, on the streets, in the office, at leisure times in clubs, parties, and in sports arena. Design products are seen from the consumer clothing's, artworks, cars, household utensils, bed sheets, chairs, electronic and electrical units, books, bill boards, aircrafts, handsets, telephones and so on. This paper is aimed at discussing similarities and divergences in design application or textiles and ceramic wares.

Textiles cover natural and manmade fibres, from the raw state to the finished functional fabrics either as clothing, furniture or decorative objects. Ceramics on the other hand is the art or science of making objects from clay produced as pottery fired for decorative and utilitarian purposes. Ceramic wares could also be referred to as pottery, made from clay and /or glazed. Areas discussed include similarities in design and application, materials, methods and techniques, uses as related to historical, utilitarian,

political, economic, religious and social and divergences. Photographs of finished works from books and sketches are used in this discussion for a clear representation and understanding.

Since prehistoric times, according to Cyril-Egware (2015), people in almost all societies have worn some kind of clothing and many theories have been advanced as to why humans began to wear clothing. One of the earliest hypothesis is the modesty or shame theory, also known as the fig leaf theory. This theory is based on the biblical story of creation. In the book of Genesis, Adam and Eve, the first human beings, realized that they are naked after they ate an apple from the tree of knowledge, ashamed of their nakedness, they made clothing for themselves out of fig leaves. On the other hand, archaeological and anthropological evidence suggest that people may have decorated their bodies with paint, tattoos, and other types of ornamentation even before they began wearing clothing made of fur or fabric. Hence, body decoration, like clothing, has served a variety of social and symbolic purposes.

Rigwell & Davies (1990) sees textiles as woven or knitted fabric manufactured as garment or cloths. Hornby (1998) defines textile as any cloth or woven material. Ojo (2002) on the other hand, defines textile design as creative decoration of fabrics and the allied production of clothing, drapes and furniture. He further states that design may be through dyeing, painting, printing, embroidery or appliqué. Wikipedia (2013), defines textile design as essentially the process of creating designs for woven, knitted or printed fabrics, seen in clothing and interior decoration items. Kukoyi (2013) defines textile as that aspect of art that employs design patterns and construction of fibres for production of fabrics of all sorts either for body adornment, home applications, offices, automobiles and almost every aspect of human endeavour. She states that textile design on the other hand is the process of creating designs, patterns and structures for knitted, woven, non woven or embellishment of fabrics.

Simply put however, textiles are the art of making cloth from the fibre stage to the finished fabric or cloth which could be constructed by weaving, tufting, plaiting, braiding, felting, embroidery, appliqué or any fabric production technique. On the other hand, textile design is the ordered arrangement and rhythmic repetition of motifs with an appropriate application of the elements and principles of design on textiles. This could be during the processing of fiber to fabric. Textile design is about creative decoration of fabrics and other allied products for clothing, drapes and furniture. The decoration may take the form of dyeing, printing, painting, embroidery, stitching and appliqué. Textiles which came to lime light basically as body covering, turned out to become fashionable depicting a mark of identity, prestige, status and later used by other artists and craftsman.

Ceramics and Textiles are products of nature, but from different sources. The basic raw materials for ceramic wares is clay while that of textiles is fibre, either natural or man-made or a combination of both. This brings us to where both have divergences, but they meet at a point where design comes to play. However, the materials are also different for suitability. Dyes or colours used for textiles may not work for ceramic wares and vice versa. Even though some techniques of transferring design may be similar, there are still some divergences.

Gillow & Sentence (2009), states that the first textile fabricated by mankind were made by manipulating fibres with the fingers. It has been suggested that the craft of basketry was invented by primitive man and the techniques developed were applied to constructing fabrics. A number of techniques were developed that involved looping, knotting, interlacing or twining strands together. The major difference between early baskets and textiles are not so much in techniques but in the choice of materials. The more resilient and flexible a fibre used, the suppler the fabric constructed from it. Some of the methods that evolved are so effective that in parts of the world, such as central and eastern north America, the loom was never devised and even with the introduction of the loom by colonists the techniques of working only with the fingers were not replaced. Raffia fibres are twisted together to make a yarn long enough to weave on a loom, while in Nigeria, lengths are sometimes knotted together.

Cyril-Egware (2013), is of the opinion that fabric design means adding embellishment to textiles, to beautify or add value to it. This could be by hand using local methods, by manual and industrial weaving looms, by manual and industrial printing techniques, by hand and machine embroidery and by hand and machine applique techniques. These are sometimes embellished with stones, buttons, sequence and zip.

According to Peters (2001) "Ceramics are wares made partly or wholly from clay. It is shaped in ordinary temperature and unless forcibly deformed, it keeps the shape and after heating (firing) to a sufficient maturing temperature, the shape is permanently retained. Products from ceramics are dinner wares, electrical insulators, bricks, soap dish, water closet, flower vases, floor tiles, roofing tiles, wall tiles, drainage tiles and pipes. These products require two-dimensional decorative design on the surfaces to enhance their aesthetics to improve marketability and production. Ceramics and textiles have played vital roles in the economy of Nigeria even before the advent of colonial rule.

Sager (1948), states that pottery is understood to mean ware of any kind made from clay, and hardened by fire, comprising the three important fields of earthenware, stoneware and porcelain. Clay, according to Sager, was originally stone and rock, which through erosion and atmospheric influences gradually disintegrated into various types of clay. Clay deposits are found partly near their source of origin, and also in plains and valleys, when clay has been carried by rivers and water. The colour range from white, light to dark gray, yellow to red and brown, and blue to blue-black. Prior to the Ice Age, people may have observed that rain water soaked into the earth in some places, while in others it remained on the surface. They then collected the mud from where the pools formed and fashioned earthen vessels, which although crude and rough, served as food storage vessels. Sager propounded that the earliest known clay receptacles were baskets lined with clay, for the purpose of rendering them as water tight as possible, that one of those baskets may have fallen by chance into fire, destroying the wicker, leaving the lining intact with permanent impressions of the best medium for hardening clay, rendering it of greater value for holding liquid.

A ceramic material is an inorganic, non-metallic, often crystalline oxide, nitride or carbide material. Some elements, such as carbon or silicon, may be considered ceramics. Traditional ceramic raw materials include clay minerals such as kaolin whereas more recent

materials include aluminium oxide, more commonly known as alumina. The modern ceramic materials, which are classified as advanced ceramics, include silicon carbide and tungsten carbide. Both are valued for their abrasion resistance, and hence find use in applications such as the wear plates of crushing equipment in mining operations. Advanced ceramics are also used in the medicine, electrical, electronics industries and body armour. For convenience, ceramic products are usually divided into four main types; these are shown below with some examples: Structural, including bricks, pipes, floor and roof tiles, refractory, such as kiln linings, gas fire radiant, steel and glass making crucibles, white wares, including tableware, cookware, wall tiles, pottery products and sanitary ware. However, the main article on pottery from Wikipedia (2013), states that frequently, the raw materials of modern ceramics do not include clays. Those that do are classified as follows: Earthenware fired at lower temperatures than other types, Stoneware vitreous or semi-vitreous, porcelain, which contains a high content of kaolin and bone china.

Ceramics or pottery and textiles are among the few early major indigenous industries in Nigeria. Others are metal-work, salt production, leatherwork, soap-making, construction and food processing. The availability of raw materials, relevant technology and the demand for the production industries determine the type of location of such indigenous industries in Nigeria Eluwa et al (1988). A variety of mineral, animal and vegetable resources found in Nigeria provide the basis for the available indigenous industries. Among the numerous raw materials are clay, cotton, iron ore, hides and skins, rubber, and wood. Divergences in design application for both ceramics and textiles in general are also noted and it is important to look at the indigenous background of these areas in Nigeria.

Pottery or ceramics has its earliest evidences in Nigeria in late stone Age. Rock Shelter on the Jos Plateau (dated to about 3000 B. C.) at two Eleu never Akure excavated by Professor Thurston Shaw in 1965, and in the Ukpa rock shelter near Atikpo excavated by Professor D. D. Hartle in 1966 (Eluwa et al 1988:812). He further observes that the earliest type of cloth (textiles) was made from animal skins, the bark of trees such as aju in Igboland, and raffia palm leaves (Ibibio), as well as locally grown cotton which became the main raw material for cloth making. While Eluwa notices that cotton constituted an important item in the trans-Saharan trade. Excavations at Igbo-Ukwu dates to the 19th century A. D. showing that by that period, cotton cloth was already being produced. Indigenous textiles involve spinning, weaving and dyeing, where each of them constitutes an industry in itself were found in Sokoto, Kano, Bida, Borno, Oyo, Abeokuta, Ilorin, Itsekiri, Aniochs, Iseyin, Okene and Akwete. Each area had its own type of cloth with a distinctive size, colour and design. (Eluwa et al 1988).

This paper compares the design application on pottery or ceramics wares from pots, dinner wares, gift items, wall and floor tiles to weaving, spinning, dyeing and printed textile fabrics. Indigenous pottery and textile, have brought prominence to Nigeria long before the pre-colonial era. Nok culture near the Jos plateau region of Nigeria brought to light the terracotta art as evidence of the oldest known terracotta figure south of the Sahara. The sophistication of Nok pottery (terracotta) has left some scholars to believe that an older, as yet undiscovered tradition must have preceded Nok terracotta art. Early exploits in textiles brought to limelight the high quality and durable cloth produced from Ijebu in the 17th century which were exported to Benin. The European bought the cloth and sold at Gabon, the Gold Coast, Angola and Brazil. Eluwa also observes that products from Kano cloth industry were sold not only in Nigeria but in other West African countries, Central and Western Sudan, Timbuktu and other parts of North Africa.

The focus of this study is on the relationship between ceramics design and the textiles design in recent times. Indeed, design generally is to improve the quality of life of a people or a place. Although design is the common thing that cut across most field or profession, such as, engineering, science, architecture, ceramics, software, textiles, or an array of house hold products, but it is important to note that the relationship between ceramics and textiles design is unique. This is really unique in the area of method of application of the design itself. An instance of this is the use of serigraphy approach to decorate wall and floor tiles which is common to application technique of design on textiles materials. This technique helps to apply multi-cultural designs on ceramics and textiles surfaces.

Another method is the use of transfers on ceramics surfaces and textiles surfaces which implies the use of ready-made sample designs on the mentioned surfaces. Such design in terms of shapes, size and colours can be applied on both the ceramics and textiles surfaces, though with some special materials and approaches. Peters (2013) considers the synchronism of design and states, "industrial design is a vehicle which brought about industrialization as a result of the few needs to improve the people's way of life as well as methods of manufacturing". Design in the area of decorating ceramics and textiles wares has some similarities.

The uniqueness of decorative design itself for the ceramics and textiles surfaces deserves commendation. A spread of some wrappers on the floor or wall when compared to some floor tiles or wall tiles can adopt similar motifs for decoration with no conflict (plate2 A & B, And Figure & & 8). The repeat patterns which may be full, half, or quarter are suitable for the design for both ceramics and textiles surfaces as shown in the plates above. Design motifs on ceramics wares are equality adequate to be used on textiles surfaces. There is no dividing line between the designer for two-dimensional decorative designs for ceramics surfaces and that of textiles surfaces. Two-dimensional decorative designs for both ceramics and textiles are uniquely similar in motif, technique and purpose or function.

Industrial design is a communication of applied science whereby the aesthetics, ergonomic, and usability of products may be improved for marketability and production (Wikipedia 2011). It is interesting to realize the uniqueness of two-dimensional design for both ceramics and textiles surfaces and this indeed gives value to both products. It is important to note designer's experiences in creating designs.

Abigail Borg advises that designers should invest time in gathering enough reference materials to work from before designing a repeat pattern and then spend some time on the computer playing around with all of the wonderful drawings and seeing what works together. She says, she often has a drawing week, where she tries to spend time doing nothing but drawing. Then Camilla Meijer is of the opinion that designers should pay attention to your surroundings, as an idea can come alive by seeing a beautifully coloured house, or an unusual tiled pavement and ends up with a passion of bringing natural patterns indoors. Illustrator Joe Rogers agrees with outdoors

as a lot of his work is inspired by the shapes, objects and sounds that can be found in nature. The practice of collecting materials - be it photographs, found objects, interesting colour combinations, unusual words - is one that every designer should follow. Our illustrators recommend gathering as much inspiration as you can to use in your creative process. Borg agrees that it is important to keep the eyes and mind open to things outside the design discipline. He started to collect reference books, especially on botanical and animal illustration and found car boots especially good for these kind of books. O'Brien adds that he has stacks of sketchbooks and old drawings he keeps everything, whether small scraps or fully-detailed masterpieces.

2. Production Technique

2.1. *Materials, Tools and Equipment for Textiles and Ceramic Design*

Paper design is first produced for technical proficiency and to avoid waste of materials, then colour separation is done for transfer to cloth and ceramic wares. The aim of technically perfect application of design on textiles and ceramic wares is for the achievement of a high standard in both design and craftsmanship and for a high aesthetic value. Kathleen Mann (1953) says that this calls for certain materials, tools and equipments for the production of such high standards.

2.2. *Textiles Materials, Tools and Equipment*

Textile designers as decorative artists make use of various materials, tools and equipments to embellish textiles. Basic materials range from fabrics dyes for resist techniques, printing and painting, to weaving and knitting tools. Others include paper, ruler, pencil and pen for drawing, needle and thread for stitching, pressing iron, basin for dyeing, tape and scissors for cutting. Equipments include different working surfaces, for printing, waxing and designing, assorted kinds of looms used for various types of woven fabrics, assorted types of sewing machines for straight sewing, embroidery and appliqué. Tools used to add design on textiles include needles for stitching, brushes for applying colours, wax and rope for resist dyeing, mesh, lacquer, sensitizer, emulsion and printing paste for surface printing and water.

2.3. *Ceramics Materials, Tools and Equipment*

Ceramic artists as designers require certain professional working tools for perfect products. They include, paper, pen, pencil, ruler, brushes, palette knives, sponge, concrete slab as working surface, kick wheel and firing kiln. Others include water, brush, glazes, paint and clay.

2.4. *Similarities*

Working from paper to fabric and ceramic wares: In textiles, designs are first drawn or planned on paper then transferred to cloth idea during the knitting or weaving process or by printing or resist dyeing. The same is done with ceramic wares. Use of guide lines to transfer motif. (Figure 1a-f)

Working directly as possible on fabric and ceramic wares with brushes of different sizes.

Arranging design to accentuate the salient features using guidelines for repeat patterns which include but not limited to simple repeat, diamond repeat, ogee repeat, hexagon repeat, scale repeat, mirror repeat brick repeat, half drop and half slide. (Figure 1a, b, c, d, e, f)

Emphasis on individual character of a design rather than the imitation of a mass-produced design such as customized designs.

Freedom of lines in connecting motifs such as free flowing lines practiced continuously to form straight, wavy, spiral, flora or zigzag motifs freehand motif transfer (Figure 4a, b)

Cut-paper method for dividing the surface of a plate or cup into equal parts for designing. (Figure 1a, b, c). These lead to motifs forming attractive designs on both ceramic wares and textile fabrics.

2.5. *Divergences*

Divergences in the application of design on ceramic and textile surfaces are seen in the production technique of three dimensional ceramic wares and three-dimensional textile fabrics. The materials and equipments also differ at some point.

2.6. *Examples of Design Transfer Techniques Using Repeat Pattern Guideline*

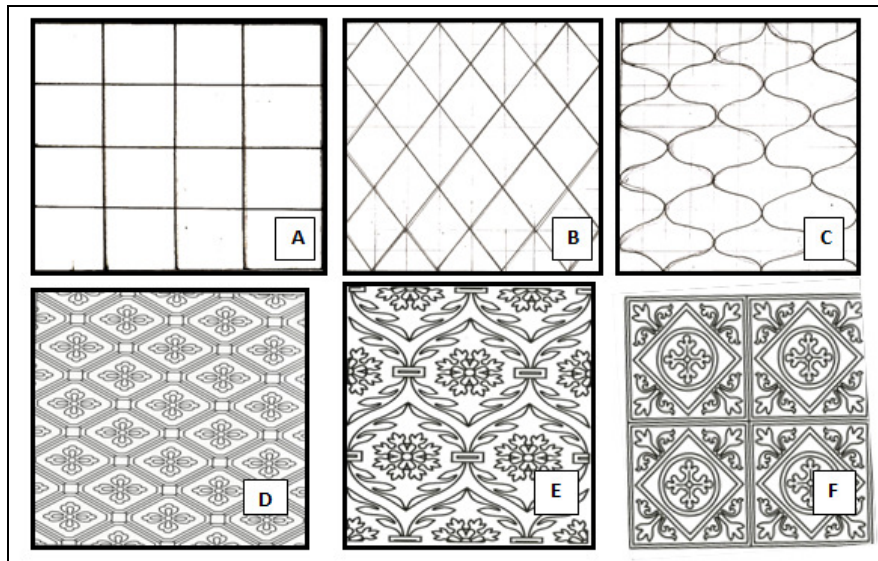


Figure 1: A- simple repeat, B- Diamond repeat, C- Ogee repeat, D-Floral motif placed in diamond repeat to form design, E- Floral motif placed in ogee repeat to form design & F- Floral motif place in simple repeat guideline to form design

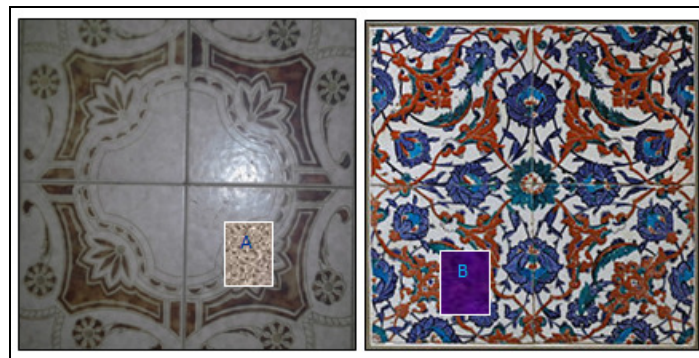


Figure 2: A & B: Floral motif place on tiles in simple repeat guideline to form design. These are also suitable designs for textiles

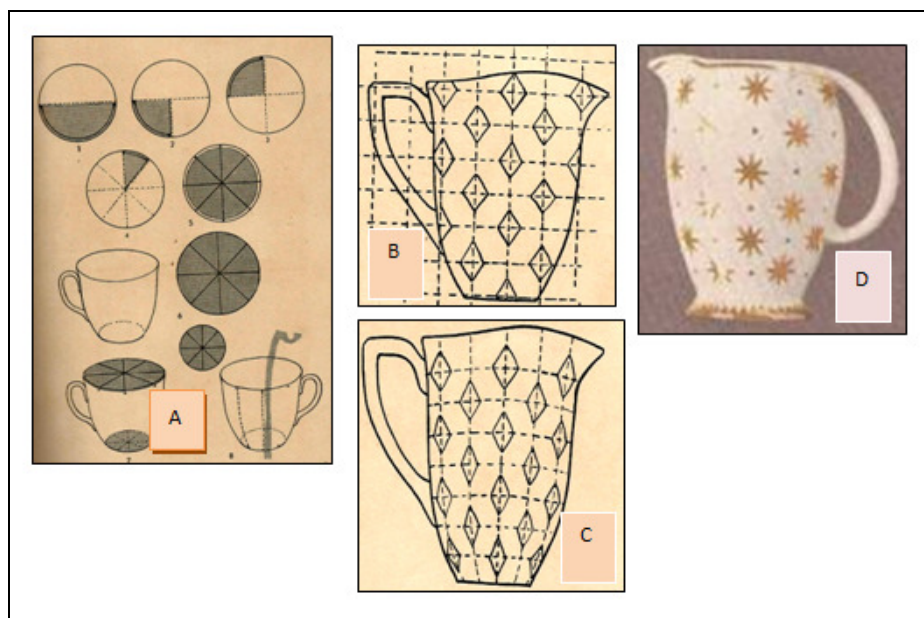


Figure 3: a,b,c,d shows cut paper method for dividing the surface of a plate or cup into equal parts
The difference here is that paper is used only to divide the sections or units for decoration,
but the repeat method is the same as in textile design

Source of illustration: Kathleen Mann (1953), China Decoration. London, Adams and Charles Black limited

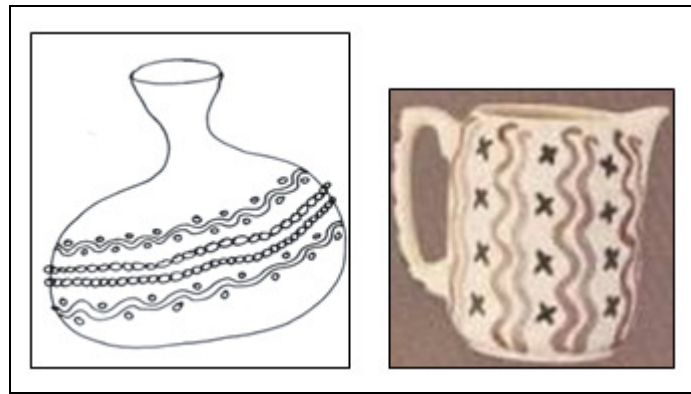


Figure 4: a & b Freehand designs on cup and pot with brush



Figure 5: A & B Freehand painting on pots



Figure 6: Stencil printing on cups



Figure 7 & 8: Screen printing on cloth

3. Design and its Application in Ceramics and Textiles: Similarities and Divergences

Textile design is essentially the process of creating designs for woven, knitted or printed fabrics respectively in clothing and decorative items. It processes from the raw material to its finished product. It is a creative field that includes fashion design, carpet manufacturing and other cloth-related field that fulfils a variety of purposes.

- Clothing, carpet, drapes, towels and rags are creative art forms.
- Created to inspire collections, trends and styles.
- Marry creative ideas together.
- Drawings of woven textile patterns are translated onto point papers and used for setting up looms for wears.
- Today designers use computer aided design software created expressly for embroidery, printing and all kinds of designs.
- Heat transfer printing is also used in textile design patterns designed in repeat to maintain a balanced design even when fabric is in yardage. For prints, repeat pattern must fit within particular screen sizes while woven repeat pattern must fit within certain loom sizes. Repeat layouts include straight & half drop.
- Design methods in painting are
Direct printing (blotch), overprinting, discharge printing, resist printing, block printing, roller printing, screen printing.
Zika Ascher, Terence Conron, Hull traders Design, Eddie Squires, and Gunta Stolzl have experimented significantly on printing.

Product, industrial or fashion designers specialized in designing for mass production of textiles. They differ from textile design and production but are closely connected and dependent on the production technique, material and artefact. (artefact manufactured work of art).

The result of textile design process in general is not an end-product, but a material for further process and application by either fashion designers, interior/furniture designer or architect. Textile artefacts always inherited and showed a strong relationship to local economics, agriculture and farming, as well as to the individuals involved. Textile artefacts once guided by their inherent potential of fulfilling common needs.

Ceramics and textiles are not seen to have similarities in design production and processes, rather the latter is seen to be two dimensional alone, not minding soft sculptures produced with textile materials that are three dimensional. Rather ceramics is most often seen as a 3-dimensional art piece without considering floor, roof and wall tiles that are two dimensional. Both are therefore seen as not having any similarities. Findings in this research proves that there are similarities and divergences in design application on textiles and ceramics which enhance their social, economic, political, and utilitarian values. Ceramic wares such as cups, plates, tiles for bathroom, kitchen and toilet wares can be decorated in details with the same motifs as that used for textile design.

3.1. Guide to Application of Design on Textiles and Ceramics Surfaces

Design application on textiles are in various ways and it may be through dyeing, printing, painting appliqué, embroidery of woven or knitted fabrics, or application of designs through weaving or knitting. The different techniques of applying designs on textiles follow certain rules. Motifs are applied considering the elements and principles of design. Both create surface pattern designs from sourcing inspiration from nature, to spotting trends and creating repeat patterns on fabrics and wares.

3.2. Map out Ideas

O'Brien observes that designers should keeping track of their ideas and record their thought process. It can really get the creative juices flowing, as. He keeps lists of places, fruits, materials, words people, anything that could spark an idea or direct a project towards fun and creativity. Meijer agrees that walls with colour swatches, individual drawings and repeat sketches. She also advocates using sketchbooks on the go, making little doodles, sketches and drawings, trying to document the ideas and visuals that come to her.

3.3. Designs Should Be Kept It Simple

Simplicity usually works best. Borg advises that It is easy to start work on a motif you plan to turn into a repeat pattern and fall into the trap of thinking you have to go crazy with detail and colour for it to be a success - if you are not careful it can turn into a real car crash. Designers should play around with their designs, and unless there is a deadline from costumers, it is unnecessary to rush. Borg says repeats can be tricky so often times he finds it helpful to go back and forth to designs after starting them, looking at them again with fresh eyes to work out where they are going. Abigail Borg is another pattern designer inspired by nature. Rather than making a repeat design, Rogers opted to play around with each individual element, creating a dynamic, colourful illustration over the full length of the sheet. "When the layer count was travelling towards 800 I started to regret my decision, but repeating elements would have felt a bit like cheating."

3.4. Build Repeat Patterns

Structurally there are endless ways of forming a repeating pattern O'Brien says. Do some research, look at how pattern designers from centuries gone by have constructed their designs into a repeat and see if you could do the same with your contemporary artwork. It can be hard to envisage what the final pattern is going to look like, says Borg. Take the time to experiment with your drawings, playing with different elements - even if you think they just wouldn't flow together," she adds. "In my case often the most striking repeats are completely accidental. Focus on a simple way that you can take your illustrative/design style into repeating patterns, then build on the

complexity of the repeat. There are a lot of technical tutorials online, and tools in Illustrator and Photoshop that can make the pattern-making process a lot easier," advises O'Brien.

3.5. *Observe Trends – And Then Set Your Own*

Our colour palettes are often guided by trend forecasting for fashion or interiors; if you're taking your patterns to products, then you have to be aware of the market, says Fiona O'Brien. As much as we do think it is super important to understand fashion's trends and directions, it's important for us to stay true to our own style rather than purely conforming; it's perhaps a longer road to success, but one that we find much more enjoyable!"

3.6. *Understand the Impact of Scale*

Applying your designs to a range of surfaces poses its own set of problems, and Ben O'Brien advises considering the range of different media from the outset. "If you are making a pattern for fabric, and the pattern tile is A3 size is better, for a much smaller surface like a ceramic piece. If your pattern became a wallpaper, for instance it would be seen very differently from how you are viewing it. Abigail Borg's wallpaper is designed to create an impact. Having spent years refining her drawing technique, Borg negotiates this challenge with ease.

4. Conclusion

A popular saying that unity is strength can also apply to inter-professionalism such as ceramics cum textiles joint investigators or researchers and others. Textiles designer or fashion designers usually gain sense of accomplishment when they produce wears to match for their clients. It is realized that producing wears to match can go beyond wears on an individual but also with the environment. Some wears can also reflect the designs on the floor or wall tiles of the client, family or organization in order to match. It is possible to achieve this desire and a lot more. Such designs are a conscious approach of making things better for people which require putting in place deliberate decisions and actions with strategic approach. In the words of Seymour (2002), "Design is making things better for people". The anticipated ally in different professions to create a bond in the area of design and others will strengthen togetherness understanding products dynamism and a noted new design approach.

Design can be arrived at simply by the use of lines. The thickness or weight of a line can make a good design likewise space between lines and the distribution of any group of motif either on cloth or ceramic wares. It is necessary to develop a sense of taste for proportion in the arrangement of motifs for design. However intricate the details, a design is more likely to be successful if the construction of the forms is simple and straight forward. This research has therefore proved that textiles and ceramics have similarities and divergences in their design and production techniques.

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