CROSSING BOUNDARIES: INCORPORATING CROCHETING IN HOLLOW METAL WARE

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AUTHORS
Cyril Etornam Adala
Department of Industrial Art, College of Art and Built Environment, KNUST, Kumasi, Ghana

Ebenezer Kofi Howard
Department of Industrial Art, College of Art and Built Environment, KNUST, Kumasi, Ghana

Tonia Amanor-Boadu
Department of Industrial Art, College of Art and Built Environment, KNUST, Kumasi, Ghana

Corresponding author's email: etorcyl@yahoo.co.uk

ABSTRACT

Metal product designers have continually employed textile construction techniques which are outside their respective practice to produce different artefacts for the wider market. In a different product application approach, the study seeks to employ crocheting as a textile construction technique to produce hollow metal wares suitable for decorative and storage purposes. To achieve this, the art studio-practice research, coupled with the researchers' experi-produce model, was employed where materials were randomly selected and subject to experimentation. It was revealed that an 18-gauge copper wire was not suitable for the crocheting process due to its thickness and limited malleability. Contrary, 26 and 28-gauge copper wire was suitable for the loop-forming process without breaks. Further experiment results are carefully captured in this study. The study essentially reveals the possibility of employing crocheting to produce hollow metal wares for specific applications. This widens the creative scope of other designers to exercise different textile construction techniques for hollow metal wares. Considering this, relevant experiments should be conducted to ascertain the outcomes before executing the final piece under strict studio regulations.

Keywords: *Hollow metalware; Crocheting; Malleability*

1. INTRODUCTION

Expanding the creative scope to include non-conventional materials and techniques has been the hallmark of most contemporary designers. This is largely practised exploring the possibilities of such materials and techniques to produce varying artefacts that serve different purposes for the consumer. Designers widely practise this phenomenon in the field of metal product design where techniques peculiar to textile construction are explored to produce interesting articles.

Kangas (2012) cited artists such as Fisch Arline and Mary Lee Hu as having explored textile techniques in jewellery. Crocheting, a textile construction technique was exercised by Fisch whereas Mary employed weaving in producing their jewellery, a situation Kangas stipulated has widened the techniques for metal product designers. Crocheting and lace making, which finds application in textile were experimented by Hanne Behreus according to Fisch (2009) for her jewellery. These techniques produced fragile jewels that were heavily criticised by the public. Hanne in addressing that explored braiding as a technique in producing jewellery that was firm (enhanced strength). Adopting a different product application, Ofori (2016) exercised wire weaving in producing lampshade and light holders for interior decoration. It was revealed from her findings that, wire weaving technique was not time-consuming when the appropriate workshop practices such as frequent annealing of metal strips and wire are adhered to. This was, however, contrary to views expressed by other artists in the field. This relatively points that, the preparation of the metal is relevant in achieving the appropriate bend or shape in the production process.

It is imperative to note that, the workability of any textile technique employed in metal products are dependent on three core properties; strength, malleability and thickness. Affirming this, Fisch (2003) argued that, craftsmen should consider malleability and strength of the metal (commonly gold, silver, copper, brass and pewter) for textile construction methods in metal works. Fisch further opined the ability of the metal to be manipulated (malleability) is largely anchored on the fineness or flexibility of the material. This ability makes it possible for the materials to be bent without unnecessary breaks, a feature (flexibility) that is exhibited by yarns when used for techniques such as crocheting, braiding and weaving. Contrary to malleability and strength, the thickness or gauge of the metal material undoubtedly influence the working properties of the textile techniques (Vallete-Scatterfield, 1980). Supporting this, Jojo (2016) stipulated that the difficulty experienced by artists when crocheting wire for jewellery is dependent on the thickness of the material. This, as Fisch (2003) concluded that the more malleable a metal, the finer it can be drawn with an ideal thickness of 0.3mm or 28 gauge (Jojo, 2016).

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It is worth mentioning that these non-conventional techniques used by the designers were peculiar to jewellery production. Considering this, the study seeks to employ crocheting as a technique in expanding the product scope for hollow metal wares. Additionally, essential material properties such as strength, malleability, thickness and fineness as established in the literature were harness in the production process of this study.

2. MATERIALS AND METHODS

Clearly stated from the literature, varying textile techniques are found in producing metal artefacts such as jewellery in their studio-setting. Considering this, the study employed the art studio-practice research to experiment and produce hollow metal ware using crocheting as a non-conventional technique in metals. The following materials were employed; 28-gauge copper wire, copper sheet and rod, coupled with tools such as Vernier callipers, planishing or raising hammer and crochet pin. The choice of 28-gauge copper wire was dependent on its durability, strength and malleability as established by Jojo (2016), Fisch (2003) and Vallete-Scatterfield (1980). Also, a conceptual framework or model (Figure 1) called *the experi-produce model* was developed as a guide in executing the final artefacts. This model illustrates four distinct phases; test, create, produce and finish.

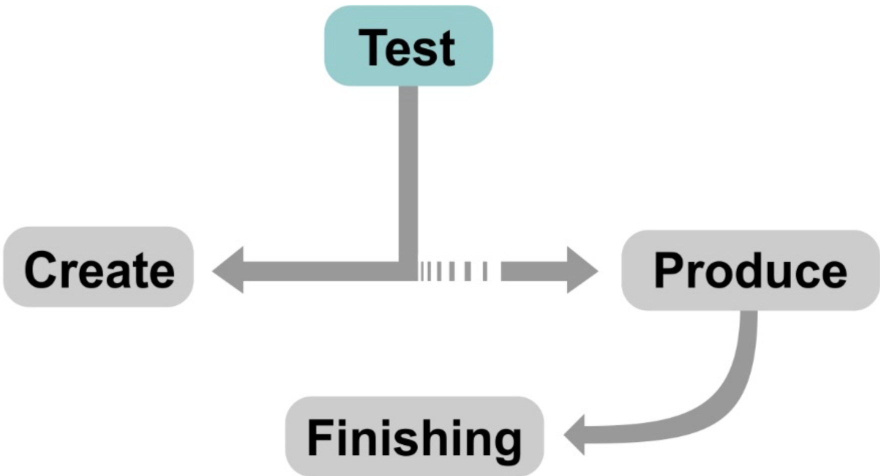

Figure 1: Experi-produce model
(Source: Researchers own construction, 2019)

2.1 Test Phase

The test phase of the model clearly entails subjecting the materials to the crocheting technique. This produces the relevant results that are vital in the production of the final artefacts.

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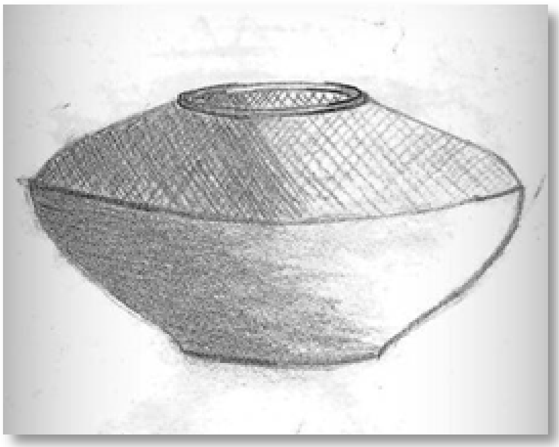
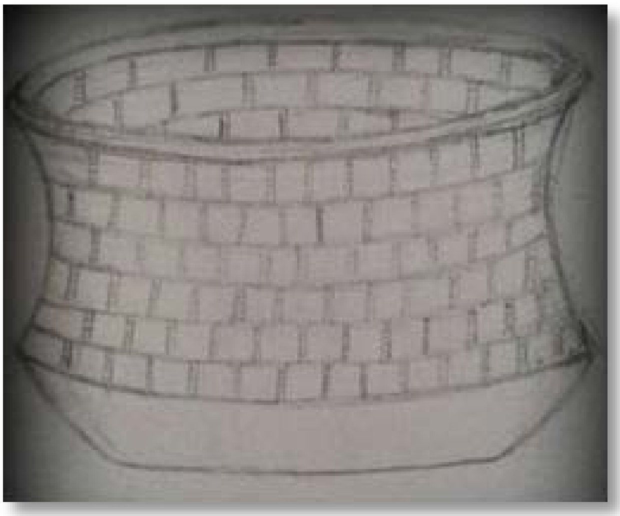
2.2 Create Phase

Every production process carefully begins with a working blueprint or sketch. It further details on the specifications of the working sketches. The design process inspired by hollow metal wares produced three sketches or drawings, as shown in Figure 2(a-c). Specifications are as follows; Figure 2a (width 8cm by height 6cm), Figure 2b (width 20cm by height 7cm) Figure 2c (width 8cm by height 7cm)

Article (a)



Article (b)



Article (c)

Figure 2 (a-c): Working drawings or sketches

2.3 Produce Phase

This phase details the procedures employed in executing the sketches made using the materials coupled with the crocheting technique.

Article (a)

This piece contains a solid base made of copper sheet with a decorated crocheting effect at the top part using a 28-gauge copper wire. To achieve a rounded base, a disc size measuring 18 cm in diameter was cut out, and a base diameter of 6 cm was marked. 1cm spacing of concentric circles was marked on the disc to facilitate the raising and planishing process (Figure 3).

Figure 3: Raising and Planishing process of the copper sheet

Figure 4: Crocheting process at the top part

Holes were drilled at the top part using a table-top vertical drill machine to aim in the crocheting process using a 28-gauge copper wire. The crocheting process (Figure 4) adopted the chain stitch crochet to create a decorative effect at the top part.

Article (b)

Similar procedures in relation to raising, planishing and drilling as observe above were employed or applied in article (b). Contrary, the crocheting process exercised a single crochet stitch (Figure 5) using a 28-gauge wire. Furthermore, a copper rod of about 3mm was shaped in a ring form and attached to the top part (Figure 6).

Figure 5: Single crochet stitch

Placement of ring made of copper rod at the top

Figure 6: Ring rod placed at the top part

Article (c)

Employing a different production approach, the base of the article (c) assumed a rounded shape by first carving the desired shape on a wood. This (carved wood in Figure 7) served as a molding unit for embossing the copper sheet (Figure 8) to assume its shape using a wooden mallet and a wooden stake.

Figure 7: Carved wood

Figure 8: Embossing the copper sheet

This embossed copper sheet was further pierced out using a jeweller's saw frame and blade. This process produced sharp edges, a situation that employed the use of a flat file (Figure 9) for smoothing out its edges. Holes were drilled at the rim for attaching of the copper wire hence the crocheting process. The process employed the double chain stitch to create a hollow curved shaped (Figure 10).

Figure 9: Filing of the rim

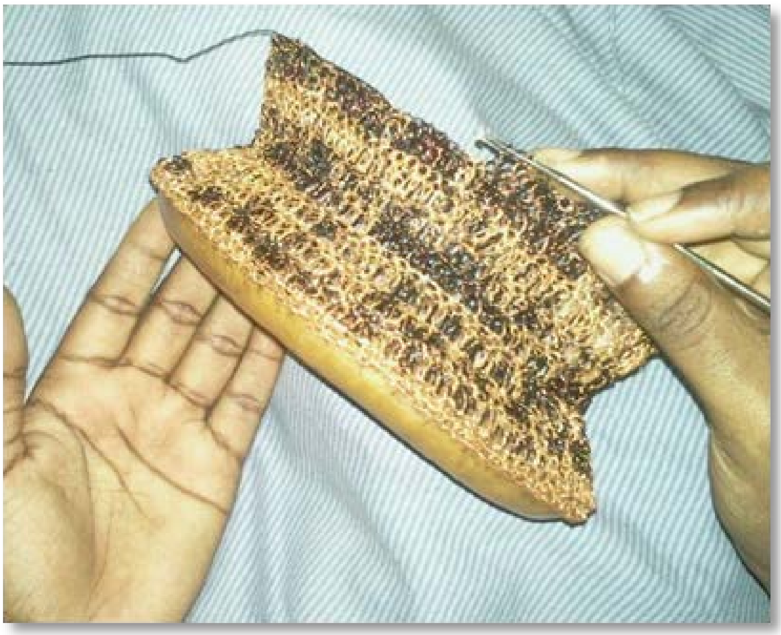


Figure 10: Crocheting process

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2.4 Finishing phase

Metal finishes are essential to enhancing its appearance and look. These finishes or surface treatments not only offer aesthetic values (Jacob, 2016; Minifaber, 2013; Pletcher and Walsh, 1993) but increases the durability of the metal, resistance to wear, tear and corrosion. With such benefits drawn, the production process employed plating (for article a), polishing to a mirror finish together with gold plating (for article b) and polishing to a mirror finish coupled with silver plating (for article c).

3. RESULTS AND DISCUSSIONS

Experimentation and testing of materials and techniques were carried out at the studio. Testing was exercised on three different copper wire gauges, i.e. 18, 26, 28 and 32. It was revealed after subjecting the wires to the crocheting process, copper with a gauge of 18 was literally too thick hence unable to form loops, 26 and 28 gauge copper wire provided the necessary malleability as stated by Fisch (2003) and Jojo (2016) for loop forming whereas that of 32 gauge wire was able to conform to loop forming but was limited in maintaining the appropriate shape due to its thin nature. These observations clearly point that, maintaining the appropriate shape or design after crocheting is vital even though a much finer copper wire can satisfy this, it would be deficient in assuming that form. In addition, the number of stitches made determines the flexibility or rigidity of the shape formed. Practical experimentation established that tightly looped wires rendered the shape too tight or stiff as compared to a much flexible shape when loops are loosely crocheted.

Finishes, as stated in the literature, enhance the appearance and resistant properties of the metal. These are largely applied to the metal surface after the production process. Contrary to that, two experiments were conducted to ascertain the appropriateness of applying finishes before or after the crocheting process. The first experiment cites the coating of the copper wire and subsequently burning off such coating after crocheting. Application of heating temperatures did not affect or burn off the coating. Higher heating temperatures, however, resulted in burning off the coating together with the metal. Considering this, the second experiment proved otherwise where burning off the coating was carried before crocheting. This method worked without any difficulty, a situation that concludes that the bending or manipulation of the copper wire contributed to limiting the burning off process.

Emphasising on the appropriate gauge, i.e. 28 for the copper wire coupled with polishing and plating the wire surface before applying it in the crocheting process, the finished works are produced as captured in Figure 11 (a-c).

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Article a

Article b

Article c
Figure 11 (a-c): Finished Works

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4. CONCLUSIONS AND RECOMMENDATIONS

The art of crossing boundaries to employ techniques from other fields widens the creativity of designers and brings about a variety of crafts for the market. The choice of a 28-gauge copper wire, coating and burning off before the crocheting process proved the possibility of harnessing such technique in hollow metal ware aside from jewellery. This was exercised in the studio experiments that affirmed the literature's position on the malleability of a 28-gauge copper wire for crocheting. Even though a 32-gauge copper wire could be suitable in that regard, it is limited in keeping the appropriate shape or form. Employing any metal for textile construction methods should exhibit the appropriate tensile strength, flexibility and malleability to conform to any shape and maintain such. This is necessary in order not to deform the design created which would subsequently deform the designs hence affect its aesthetics. It is therefore important that experimentation is conducted by designers or manufacturers before executing the final article so as to discover all the outcomes. It is further recommended for strict workshop practices (Ofori, 2016) and adherence to safety precautionary measures at the studio setting to ensure an injurious free workspace and environment.

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