Repurposing Of Junk: From Household Metal Waste Into Utilitarian Assemblages

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Abstract

This study aims at explicating the design and production processes involved in repurposing a variety of household metallic wastes into useful assemblages. The study used an art-based research approach. An assortment of household metallic wastes such as; scrap knives, spoons, forks, cooking utensils, door hinges, empty food and beverage cans as well as pieces of steel plates were used in producing the various assemblages depicted. The works were produced using various techniques including; soldering, welding, brazing, riveting cutting, drilling, bending and hammering. The research yielded a total of 34 utilitarian assemblages. These comprised; phone holders, egg holders, a food warmer, a hot pot stand, tissue paper holders, as well as napkin holders and rings. Others include; a fruit bowl, coasters, side bowls, a cruet set holder, a flower vase and candy bowls. This study aims to guide, encourage and inspire many creative people to embark on similar artistic projects.

Keywords: *Assemblage Art, Junk Art, Junk Aesthetics, Utilitarian Objects, Metal Art, Recycle, Repurposing, Art-based Research*

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Introduction

The industrial revolution of the nineteenth and twentieth centuries spear-headed the design and production of various articles that enhanced the living standards of man. But as man's living standards improved, the negative culture of accelerated build-up of waste materials and dross becomes the norm in many cultures (Strasser 1999). As vividly articulated by Burges (2014:202) "Every time we advance historically, things, structures, and people are rendered obsolete," leading to the constant generation of detritus. Junk objects emanating from domestic settings, industries, workplaces, and many other environments of human existence continue to build-up in societies across the globe. Evidently, the world has metamorphosed into a disposable society; with many people throwing away articles at varying degrees of depreciation, instead of recovering and repairing them. This is contributing to the heightened build-up of assorted waste objects in our global space. Over the years, attempts have been made to control these trash build-ups in many countries by employing various trash appropriation methods such as recycling, upscaling, repurposing, reuse, just to mention a few. Whitely (2011) even reports that a field of study known as "garbology" had been developed towards the study and understanding of the characteristics of trash and waste, and how best they could be managed.

Artists, since time immemorial, have been using art to draw attention to issues plaguing society in various ways. The garbage menace has equally captured the attention of many artists around the globe, who employed diverse discards in the production of a variety of assemblage artworks. The historiography of assemblage art traced the development of this artistic genre to the humble efforts of artists such as Jean Dubuffet, Pablo Picasso, Kurt Schwitters and Marcel Duchamp. Historical records revealed that the creative efforts of the above artists culminated in a major exhibition curated by William Seitz and Peter Selz, at the Museum of Modern Art (New York) in 1961, titled; "The Art of Assemblage." It is on record that the term "assemblage," was variedly used by Arthur Dove as early as 1925, and by Jean Dubuffet in 1953 (Whiteley, 2011). The nomenclature as explained by Whiteley (2014:32), "refers to a technique in which an assortment of things, often found objects and discarded materials, are combined to create three-dimensional artworks."

Assemblage art is fast gaining ground in Africa (Whiteley, 2011; Evans, 2010; Sylla & Bertelsen, 1998), and many artists are seeing trash as the trope of the twenty-first century (Whiteley, 2011). Despite the growing popularity of the art form on the African continent and around the world, the researchers observed that there are limited documents to inspire and guide students and artists interested in repurposing found objects into assemblages. Because assemblage art has become a crucial component of many art curricula, it is believed this study would be an invaluable resource material for art students and assemblage art lovers in detritus appropriation and repurposing. Specifically, it is believed this study would arm many originative people with the knowledge to transform household metal wastes into useful artistic products, which could be used in various homes or sold to generate income, instead of allowing them to clog our environments.

Methodology

The researchers applied Art-Based Research (ABR) approach. ABR is a practice-based research method (Irwin & Springgay, 2008), which employs artistic techniques, materials, expressions and products in an orderly and scientific manner as the principal method of studying and understanding an artistic phenomenon (Rolling, 2010; Irwin & Springgay, 2008; McNiff, 2009). Sullivan (2006) argues that artistic products are birthed through systematic creative activities that reveal "thematic patterns of evidence from which meaning is made vivid." Sullivan elaborates further that artistic processes and the corresponding artistic products, constitute research. Indeed, Cahnmann-Taylor and Siegesmund (2008:99) postulate that the "visual is not just a tool for recording, analyzing or interpreting data; it has become a tool for creating data."

McNiff, articulates further that over the years, artists realized that just sampling "methods from the sciences cannot fully address the complexity of human learning in all its artistic richness" (2009:21), hence the development and introduction of ABR, as a way of providing a tailor-made methodological approach for creative researchers. Though ABR reports are language-based, the experimentations employ "artistic forms that are used to capture, reflect, and inquire into the multiple textural realities being explored" (Sullivan, 2006:23).

The study is a studio-based investigation, that experimented with various household metallic discards such as; cutlery, pans, hinges as well as empty food and beverage containers, using series of relevant processes and techniques. The detailed methodological processes undertaken by the researchers are chronologically detailed below.

Collection and Cleaning of Discards

The various discards used in producing the assemblages were collected from friends, drinking bars, restaurants, waste bins and other public places. All the metallic discards were first thoroughly washed with detergents and subsequently grouped according to their material compositions before using them.

Materials, Tools and Equipment Used

Materials	**Uses**
Scrap knives, spoons, forks, cooking utensils, door hinges, empty food and beverage cans and pieces of steel plates	Metal wastes used in producing the assemblages
Aluminium, brass and copper brazing rods	For brazing works
Welding electrodes	Employed in welding works
Silver solder	Used in soldering some stainless-steel metallic materials
Aluminium filler metals	For welding aluminium objects
Sulphuric and hydrofluoric acid	Used as pickling components to clean fire scales and corrosive flux residue from soldered and brazed pieces.
Powdered Borax	Used as flux
Rivets (both solid and hollow rivets)	For joining
Annealed copper and brass	For decorative inlaying

Figure 1. Materials and their Uses.

Tools and Equipment

Tools/Equipment	Uses
Oxy-Acetylene torch	For welding and heating
Gas welding plant	For heating, soldering and brazing
Ceramic Brick	Used as welding and soldering stands (torch work)
Hand Riveting Gun	For setting rivets
Soldering torch	Employed in soldering activities
Metal shears	Utilized in cutting empty food and drink cans
Anvil	For hammering
Bench Vice	For securing objects during fabrication
Power Drill	Used in boring holes
Jewellers Saw	Employed in making small and intricate cuts
Hack saw	For cutting household waste metals
Steel files	For filling works
Jobbing Hammer	For forming, hammering and texturing of metal surfaces
Emery Paper	For sanding brazed, soldered and welded surfaces after filling
Pliers	Used in forming and shaping works
Steel punches	For boring holes and chasing work
Safety glasses and gloves	For protection during welding, brazing, soldering and hammering activities.

Figure 2. Tools and Equipment used.

Design and Production of the Assemblages

Design Stages

Many sketches were produced by the researchers before commencing the actual production processes. The sketches made it possible for the researchers to generate visual images of possible assemblages that could be produced from the various waste objects collected for the project. The drawings covered articles such as; egg holders, candles holders, flower vases, mint bowls and wine holders. Others are; phone holders, hot bowl stands, napkin rings, just to mention a few. Some of the sketches are captured in figures 3 and 4 below.

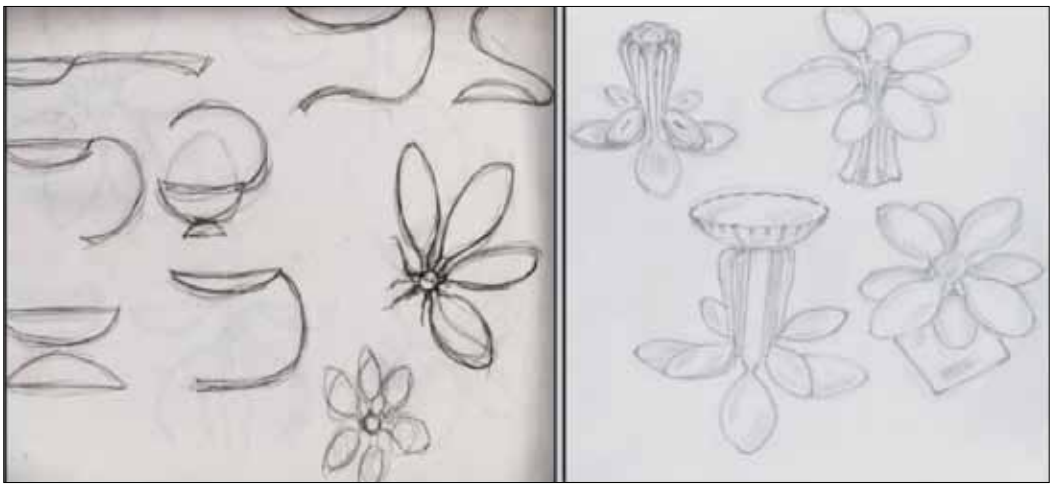

Figure 3. Sketches of egg and candle stands (left), sketches of flower vases and mint bowls (right).

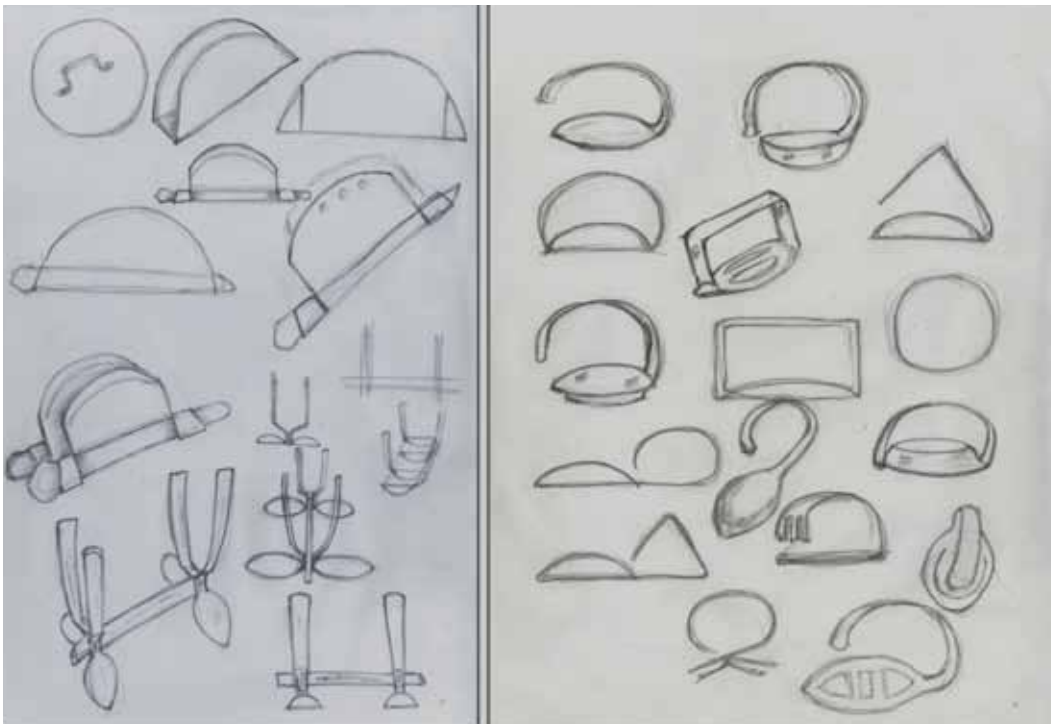

Figure 4. Sketches of napkin/tissue paper holders (left), sketches of napkin rings (right).

Production Techniques Used

The joining methods used to assemble the household waste objects are mainly, soldering, welding, brazing and riveting. The above techniques were used in assembling metallic materials such as stainless steel, aluminium and tin-coated iron. The researchers experimented with joining processes that best complements the available materials. Series of experimentations were carried out to determine the appropriateness of the joining techniques in fabricating the various sketches prepared for the project.

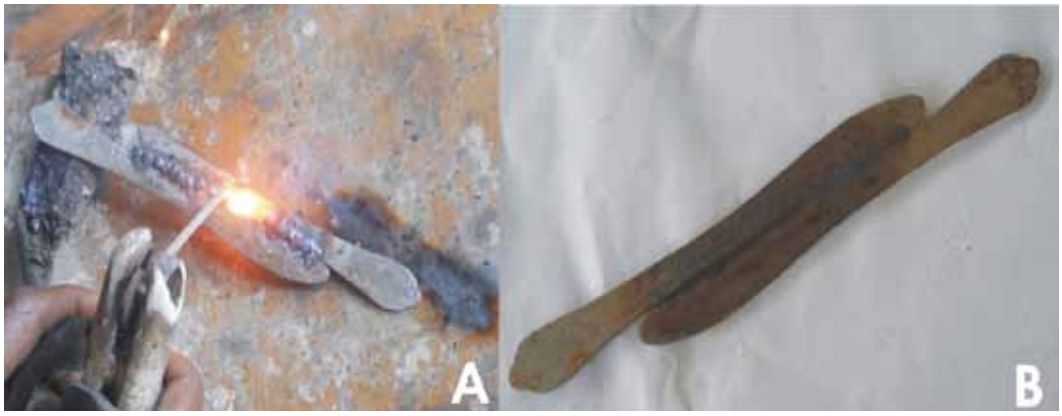

Figure 5. Arc-welding of stainless-steel knives (A), welded knives (B).

Soldering, Welding and Brazing

The researchers experimented with aluminium welding; using aluminium filler materials, aluminium rods and powdered borax as flux. These experiments were

unsuccessful due to the high temperature generated by the oxy-acetylene torch. Subsequently, riveting technique was used in assembling all the aluminium materials.

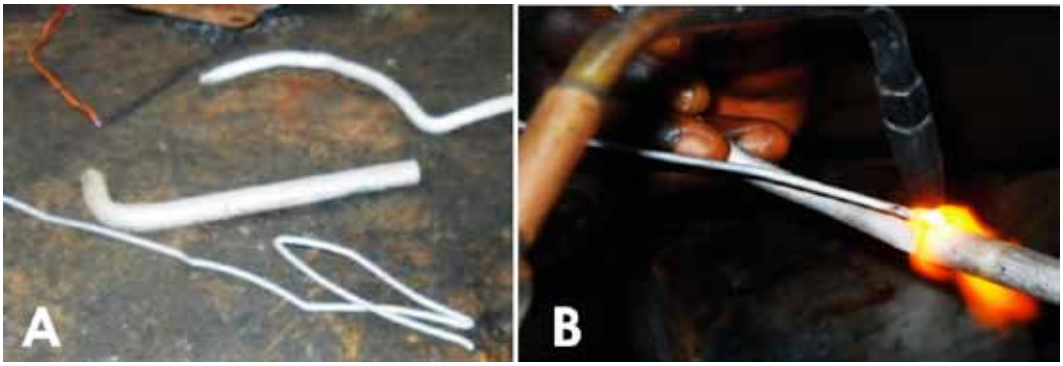

Figure 6. Aluminium filler materials (A), test welding of aluminium material (B).

Soldering was also carried out on stainless-steel metals using silver solder in another experiment (see figure 7 "B" below). The stainless-steel scrap cutlery attained the required temperature for the solder to flow into its joints to bind them together successfully. Soldering was by oxy-acetylene torch, which produced higher flame temperature and the flux used was borax in water.

Generally, all the brazing tests done on stainless steel materials with brass rods were very successful; especially when borax was used as flux. It was noted that when a solution of borax and water was used, a better result was achieved. The flux solution flowed into the joints easily to accelerate capillary action, thereby firmly securing the scrap materials together.

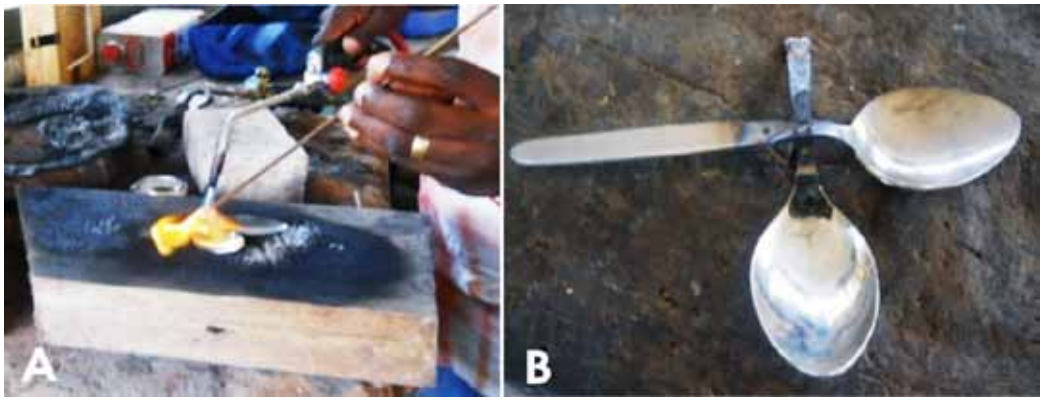

Figure 7. Brazing of stainless-steel spoons using brass brazing rod (A), soldered stainless-steel spoons using silver solder (B).

Riveting

Solid and hollow rivets were successfully tried on aluminium and tin-coated iron food cans. The rivets were affixed with a hammer and a hand anvil, as demonstrated in figure 8 below. The researchers carried out other trials with improvised rivets processed from small metal tubes and rods.

Figure 8. Riveting of food can.

Cutting, Drilling, Bending and Hammering
Some of the household discards were shaped by cutting, bending and hammering to achieve the desired shapes. The researchers used hacksaw blades, a hammer, an anvil and a bench vice in accomplishing the above activities. A Jewellers saw was also used to cut intricate decorative designs on some of the metallic materials before joining them. Both manual and power drills were equally used to bore holes for decorative inlaying and riveting activities.

Filing and Sanding
Steel files were used to smoothen all cut surfaces. The files were also utilized in levelling welded, soldered and brazed joints of some of the metallic objects. The researchers equally employed various grades of emery paper to smoothen and polish the filed surfaces of the objects.

Inlaying
Inlaying is a decorative procedure used in embedding pieces of different materials into the surface of a material. The researchers commenced the process by cutting skeletal veins into the surfaces of some of the waste metallic objects with a steel punch and a hammer. Thereafter, pieces of annealed copper or brass wires were aligned in the cut veins and hammered to embed them (See figure 10 “A” and “B” below).

Chasing
The chasing technique was used to embellish the metallic surfaces of some of the assemblages. Chasing refers to a decorative metalworking technique used in creating low relief designs on malleable metallic surfaces using various tempered punch tools and hammer (see figure 16 below).

Pickling
The pickling technique was used to remove impurities and scale from the surfaces of some the assembled objects. The scales, or oxide layers, are normally deposited during hot working processes. After filling and sanding, the assembled objects

were dipped in pickle solution prepared from eight parts of sulfuric or hydrofluoric acid and two parts of water. Subsequently, the objects were thoroughly rinsed in warm water and then wiped.

Assemblages

Cell Phone Holders

Two designs of the cell phone holders were created. The first one (See figure 9 "A" below) is a single cell phone holder. The holder was crafted from a fork, while the base of the holder was made from a scrap spoon bowl. It is inlaid with brass strips to enhance its aesthetics. The second design is a double cell phone holder (See figure 9 "B" below) which reflects the Ghanaian adage "two heads are better than one." The upper part of the fork which forms the holder was assembled from two forks. The triangular base was crafted from scrap knives.

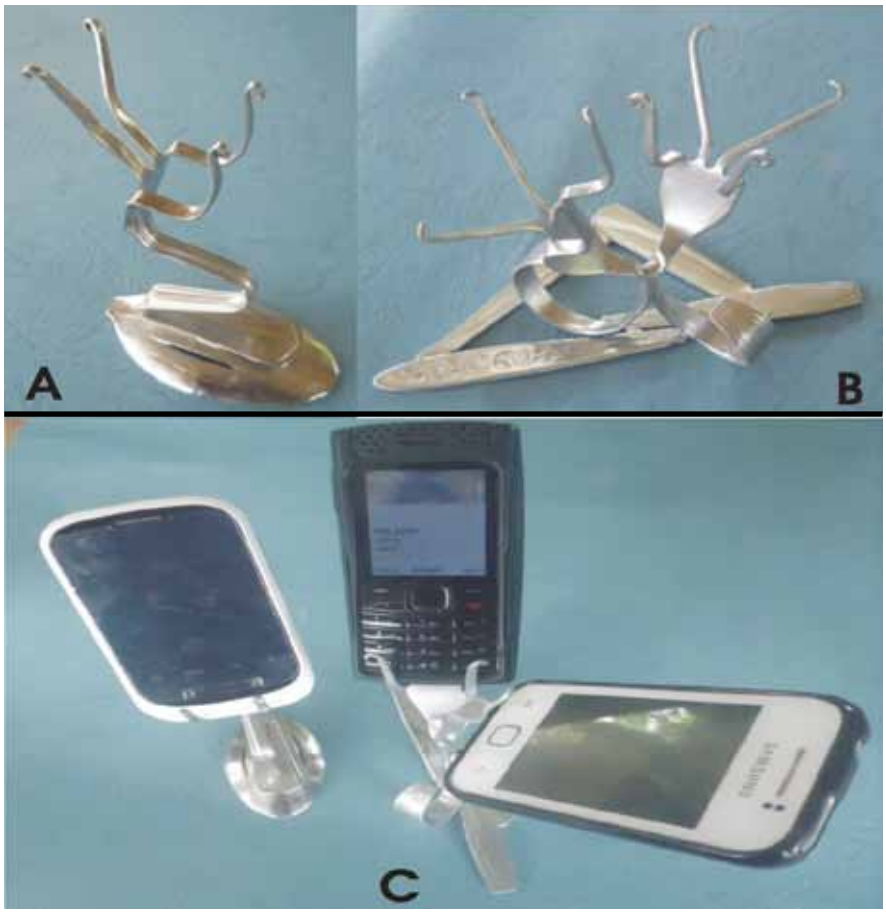

Figure 9. Single phone holder (A), double phone holder (B), phone holders in use (C) - assembled from a spoon, a knife and a fork.

Egg/Candle Stand

The similarity of the shape of an egg and that of the bowl of a spoon inspired the researchers to create the egg stand (See figure 10 below). The researchers decided to design a stand to hold six boiled eggs for the dining table with the possibility of

the seventh bowl, at the top, serving as a candle-holder. The artefacts were mainly constructed from spoons. The holders have incised skeletal designs, with parts inlaid with copper.

Figure 10. Egg stand for two eggs (A) Egg/candle stand (B), egg stands in use (C) – assembled from metal spoons.

Food Warmer/Stand

Two assemblages were fabricated as part of this project. Both objects were manufactured from forks, spoons, and knives. In the first design, the tines of the fork were spaced-out to conveniently support a standard bowl or saucepan. To keep the food warm, the bowl of a spoon was brazed to other components to form a holder for a candle, which when lit, could warm-up the food in the saucepan. The spoon bowls supporting the first design (figure 11 "A" has intricate Adinkra symbols cut into them to give cultural touches to the products. The second design (figure 11 "B") is triangular-shaped. The second product was designed to be used as a hot bowl or pot stand.

Napkin/Tissue Paper Holder

Two varieties of the napkin/tissue paper holders were fabricated. An old saucepan lid, two knives and an empty beverage can were the basic raw materials for the first design (see figure 12 "A" below). The saucepan lid was cut and folded into a shape suitable for holding napkins. Thereafter, the sides of the folded lid were reinforced with scrap knives to give the piece a firm stand. Sheets of red colored beverage cans were wrapped at sections of the folded plate and riveted to hold them in place. Subsequently, brass screws were affixed on the knives to embellish them. The second design (see figure 12 "B" below) was crafted with four scrap tea-

spoons and a table knife. The spoons were shaped and then welded to the knife. Thereafter, brass strips were inlaid at various parts of the assemblage to enhance its visual appeal.

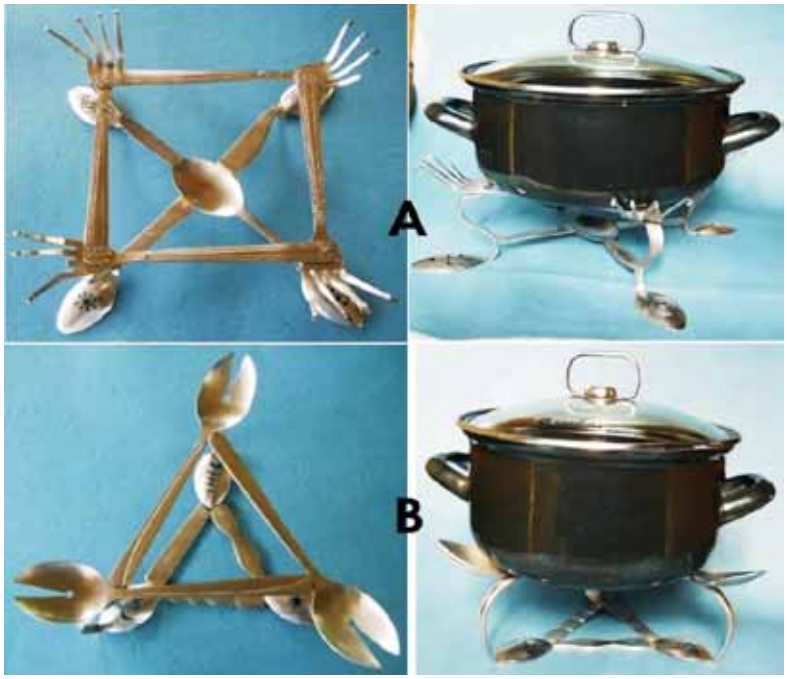

Figure 11. Food warmer (A), Hot pot stand (B) - assembled from forks, spoons, and knives.

Figure 12. Napkin/Tissue paper holders – assembled from a saucepan lid, knives, spoons and an aluminium beverage can.

Wine Holder

The wine holder (see figure 13 below) was designed to support the base, body and neck of wine bottles. The holder was entirely fabricated from spoons. The spoons were shaped and brazed to hold a wine bottle. Parts of the holder were pierced and cut out in various designs. Some portions of the holder were also inlaid with copper to ornament them.

Figure 13. Wine holder – assembled from scrap metal spoons.

Napkin Rings

Six assortments of napkin rings (see figure 14 below) were produced. The articles were entirely crafted from discarded metal spoons, which were shaped into various designs. Some of the rings are closed while others are slightly opened. The napkin rings were ornamented with brass and copper rivets and inlays. The researchers also cut intricate designs on the bowls of the spoons to increase their allure.

Figure 14. Napkin rings – produced from metal spoons.

Fruit Bowl

The bowl captured in figure 15 below was fashioned out of an old handless frying pan and beverage can tops. To produce this object, ten beverage can tops were cut and riveted around the rim of the pan. Thereafter, portions of the frying pan rim were cut out into semi-circular shapes to harmonize with the shapes of the beverage can tops. The researchers also cut triangular shapes below the rim of the pan to beautify the object and aid airflow.

Figure 15. Fruit bowl – assembled from an aluminum frying pan and aluminium beverage can tops.

Coaster/Side Bowls

The coaster and side bowls (see figure 16 below) were entirely crafted from empty aluminium beverage cans. The upper parts of the beverage cans were first cut-off with metal shears. Thereafter, the walls of the cans were sliced into multiple strips and rolled into coils. Some of the coiled strips were spread out horizontally while others were left to stand vertically. Adinkra symbols were also chased on the bases of some of the objects to embellish them.

Figure 16. Coasters and side bowls - crafted from aluminium beverage cans.

Cruet Set Holder

The cruet set (see figure 17 below) was produced from tomato paste and beverage cans. The three tomato paste cans forming the holders were assembled around a triangular column crafted from a beverage can. The column was topped with an inverted base of an empty beverage can. The items were all mounted on a square base composed of a flattened tomato can. The various components were riveted together to firmly hold them in place.

Figure 17. Cruet set holder – crafted from tomato paste and aluminium beverage cans.

Flower Vase and Candy Bowls

This artefact was designed to be used as a flower vase and a mint bowl stand. The object was created from discarded spoons, the bowl of a ladle, a piece of steel plate, door hinges, knives and an aluminium sheet cut from a beverage can. The bowls and handles of the spoons were first bent to form the shape of the vase. Thereafter, designs were cut on the bowls using a jewellers saw. The items were then brazed around the outer surfaces of the two sets of rings shaped from the knives. Subsequently, a sheet metal cut from an empty coke can was rolled-up and inserted into the centre of the structure, to create a receptacle for the flower stalks (Figure 18).

Figure 18. Flower vase – assembled from spoons, steel plate, knives and an aluminium beverage can.

To ensure that the artefact serves as a vase and a mint bowl stand, the researchers designed the base of the object to accommodate a square stand when the artefact is used as a flower vase. When inverted, the stand could be replaced with a small aluminium bowl with a serrated edge (see figure 19 below) which serves

as a mint bowl. The square stand was produced from a piece of steel plate, while the mint bowl was crafted from the bowl of a ladle. Both items were mounted on metal tubes fashioned out of the door hinges. One of the metal tubes was brazed on the square steel stand, while the other one was riveted on the bowl of the ladle.

Figure 19. Candy bowl – assembled from spoons, the bowl of a ladle, door hinges, steel plate, knives and an aluminium beverage can.

Figure 20 below shows another version of a candy bowl produced from scrap beverage cans and their opening tabs. To produce these versions of the mint bowls, the researchers first cut-off the top of the beverage cans. Subsequently, the vertical walls of the cans were sliced into strips. Several opening tabs were then linked together with the cut aluminium strips to form a basket for holding the candies.

Figure 20. Candy bowl – produced from aluminium beverage cans.

Conclusion

The results of this study showed that assemblage art could be used in manufacturing myriads of alluring utilitarian objects which could be used by many at homes, offices, hotels, restaurants, just to mention a few. These artistic objects could also be a reliable source of income for many creative people.

The researchers hold the view that the findings of this research would not only guide those interested in assemblage art, but would also inspire and encourage artists, students and many innovative people to embark on similar junk repurposing projects, which would not only generate myriads of useful artistic objects for society, but also aid in controlling the increasing menace of waste build-up in our communities.

Garbage build-up is a menace affecting all societies around the world. Various methods are being employed by many in controlling the increasing cumulation of rubble and discards. The outcome of this study equally demonstrates the possibility of using artistic technologies in tandem with other scientific approaches to minimize the effects of the canker.

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