Studio Experimentation with Charcoal for Casting and Assemblage in Sculpture

GERSHON Paul
Department of Fine and Applied Arts
Faculty of Environmental Sciences
University of Jos, Plateau State, Nigeria
E-Mail: chinyanggershon84@yahoo.com
Phone: + 2347035333974

ABSTRACT
Until recently, sculptors were constrained to the use of marble, stone, bronze, terracotta, wood, ivory and other conventional media due to the non-availability of contemporary media, equipment and techniques. However, the modern art movements like conceptual art, cubism, abstraction, realism, installation, pop art, minimalism etc. are simultaneously united with diverse techniques, approach and the understanding of media (Pierre, 2017). The ongoing development seems to be at the moment necessitating sculptors into various studio experimentations which seem not only to deal with the issues of forms alone but also the innovative explorations and approaches of diverse media to improve the existing and new ones. This article’s concern is with new studio experimentations on charcoal for assemblage and casting in sculpture using equestrian and related figures. The Studio-based and led research was used in this article to generate the discussions and future projections for possibilities of new media in sculptural renditions.

Keywords: Charcoal, Polyvinyl Chloride (Vinyl Tile Adhesive), Equestrian forms and Fibreglass resin.

INTRODUCTION
This study centres on studio practice-led methodology which is based on continuous encounter by means of visual contact with the subject. Studio practice led research, according to Gray and Malins (2004), is an attempt to unite theory, practice, thought and action into a frame work for inquiry. Thus, the researcher spent time observing and examining human and equestrian forms and making studies that served as preliminary sketches for the purpose of this study. The sketches were used in the studio to produce the sculptural works. Charcoal lumps were assembled on mild steel rods’ armature while the charcoal dust and polyvinyl chloride solution was used for casting and for pasting of the charcoal pieces together on the armature.

Data collection
The tools used for the collection of data for the purpose of this study are a still camera, sketch pads, the internet and textbooks. This study used both primary and secondary sources for data collection. The primary sources of data were the direct observations and study of humans and equines figures around the Zaria Polo Club and environs. The secondary sources of data were obtained through careful observations and direct studies of human and steeds’ images from text books and the internet. The charcoal’s light weight, imperishability, uniqueness, the natural matt black plus the suggestive forms rendered it ideal material for the exploration. While the mixture of the charcoal dust with the polyvinyl chloride and the fibreglass resin remain the binding agents. Below are some images that were used for the study.
Plate I: Equestrian Images from primary source of data.
Plate II: Images of the model from primary source of data.

Data Analysis
The above data were studied, organized and composed to create an equestrian sculpture, horse’s head and a life sculpture. The researcher made some equestrian sketches (Plate III) which form the preface for the charcoal explorations. The sketches are shown in the plates below
Procedures
Thorne (2014) reveals that Seon Ghi Bahk has taken advantage of the charcoal’s light weight to create some overwhelming installation of suspended charcoal. The Emptied Gestures: Physical Movement Translation into Symmetrical Charcoal Drawings by Heather Hansen (Jobson, 2014) can also be seen as a contemporary breakthrough in both the visual and performing arts through the use of charcoal. In order to bring to light additional approaches to the application of charcoal in sculpture, this study is experimenting casting with charcoal dust and polyvinyl chloride in the creation of a horse’s head and a seated female figure (Plate II). The second charcoal exploration involves an assembling process of individual charcoal pieces of different sizes and structures in the creation of an equestrian form. Representational sketches and drawings of the equestrian images were initially done, followed by the constructions of the armature in this stage.

Armature Constructions: According to Claire (2006), the armature is an inherent structural strength which supports an outer covering of a malleable medium, performing the same function as bones in the body. An armature can perhaps mean a support structure that can aid or mar the final outcome of a sculpture. Therefore skeletal framework for the representational sculpture of this study was carefully constructed with the 12 mm mild steel iron rods which were measured, cut, bent and welded according to a quarter life-size scale of the mounted horse in action. The armature was made with a single point of connection with its pedestal by means of doubling the 12 mm mild steel rods for firmness and solidity. The connecting point between the equestrian form and the pedestal is the front hoof.
Preparation of the Binding Agents: Different types of binding agents such as cyanoacrylate C5H5NO2 (super glue), polyvinyl acetate (white glue), multipurpose adhesive, evo-stik etc were experimented on the charcoal. These binders turned out to give an unsuitable result on the charcoal surface except the polyvinyl acetate (white glue). While in the course of the examination, polyvinyl chloride and fibreglass resin were eventually experimented and noticed to be favourable binding agents for this study. This is due to their controllable and strong setting capabilities which made them very effective in bonding the charcoal lumps together. Some homemade charcoal pieces where initially crushed into powdery form. The charcoal powder will be diluted with the polyvinyl chloride and fibreglass resin to conceal their stains on the work. The charcoal powder mixture with the fibreglass resin was used as the binder for the initial
outlining of the forms at the early stage of the assemblage. The charcoal powder and the polyvinyl chloride mixture were used for the final stage of the charcoal assemblage in forming the equestrian sculpture. This is as a result of its slow setting nature which gives room for manipulation of details and finishing. Below are the images (Plate V) of processes involved in preparing the binding agents.
First Studio Exploration

The first studio exploration was carried out on casting with the charcoal powder. A horse’s head was first modeled in clay and the moulds taken in Plaster of Paris (POP) which were opened after setting. The opened moulds were cleaned up after which the separators were applied, i.e. matching stain and petroleum jelly. The mixture of charcoal powder and the polyvinyl chloride was applied in the moulds and allowed to set. A layer of denim fabric material pieces soaked in the polyvinyl chloride was laid over the first charcoal powder layer; this is to serve an equivalent function with the fibre mat used in the fibreglass resin casting for reinforcement. This was followed by the separation of the POP mould from the cast work in charcoal, then the coupling with the 8 mm mild steel rods plus the same charcoal powder and the vinyl tile adhesive. The work was mounted on an iron pedestal followed by the coating with the dilution of vinyl tile adhesive and water. A life sculpture of about a quarter life size was also produced using the media and procedure in order to validate its feasibility as a new alternative to the existing casting media in sculpture. The procedures are shown in the plates below.
Plate VIII: Mould Taking.

Plate IX: Mould Taking.

Plate X: Mould Cleaning.

Plate XI: Application of Separators in Mould.

Plate XII: Application of Separators.

Plate XIII: Charging with Polyvinyl Chloride and Charcoal Dust Solution.
Plate XIV: Charging.

Plate XV: Coupling.

Plate XVI: Coupling.

Plate XVII: Finishing.

Plate XVIII: Finished work (side view and Front views).
Plate XIX: Second finding of charcoal casting

Second Charcoal Exploration
This stage deals with the assembling technique of this research. Some drawings of the equestrian forms were made from the collections of images from the primary and secondary sources which are shown above. These drawings were transformed into representational equestrian sculpture of about quarter life size with the charcoal lumps. Armature for the work was depicted in action and with single hoof contact to the pedestal. The armature was constructed from 12 mm. mild steel rods which were paired as explained above, strategically rooted and firmly welded into the base area, followed by underlay of flat wood. Individual charcoal pieces of different sizes were sorted according to sizes and shapes and then sequentially, bond to the armature with the charcoal powder mixture and the fibreglass resin in the early stage of the assemblage. While the same charcoal powder mixture with the polyvinyl chloride was used for detailing and finishing until the envisioned forms were attained. Some ropes were used to hold the charcoal lumps in place until the binding agent was set. See plates below.

Plate XXII: Setting up of Charcoal Pieces on the Armature.
Plate XXIII: *The Continual Process of Fixing the Charcoal*

Plate XXIV: *The Continual Process of Fixing the Charcoal.*

Plate XXV: *Detailing and Finishing*
Finishing
In order to enhance the presentation as well as to prevent smudging, all the works were coated with a dilution of polyvinyl chloride and water so as to serve as a fixative.

Limitation
The impediment experienced in this study is the charcoal’s negative response to most of the easy-to-control and the common binding agents like the cyanoacrylate C5H5NO2, polyvinyl acetate, multipurpose adhesive, multiband gold and evo-stick except the fibreglass resin and the vinyl tile adhesive which their complexities prolonged the studio explorations. The sculptural products of the charcoal and the polyvinyl chloride can only serve indoor purposes because the materials used may not withstand the harsh conditions of the outdoor weather.

SUMMARY
The research design used for this study is a studio practice-led methodology and the method used in the execution of this study was through observation of the mounted and free horses’ forms which led to the production of sketches and the studio works. Data were collected through the primary and secondary sources. Primary source of data collection consisted mainly of observation of the mounted and free horses which led to snapped photographs and the production of sketches on sites. While the secondary source of data collection comprised of the analyses of the equestrian images from different sources such as the internet, books, etc. Data collected were analyzed and grouped into two major categories, viz., modeling and casting with charcoal dust and polyvinyl chloride as well as the charcoal assemblages. Although the outcomes of this experiment which are shown in the earlier plates yielded effective results, however, the charcoal’s peculiar forms are not noticeable in the casting aspect of the study as there is no visible and clear-cut difference between the finding and the synthetic fibreglass resin and concrete castings which have been practiced for years.

FINDINGS
The assembling approach of this study conserves the natural uniqueness texture forms the charcoal which was used in this study to create an equestrian form that contain delicate but firm balance and stability on minimal contacts with the base areas. The study also found out that charcoal could be used to create equestrian forms with dynamic motions and actions. This study has found out that charcoal’s light weight makes it an appropriate option for heavy media like stone, metal, bronze and concrete when it comes to
the issue of portability and curbing the overstressing dependence of the equestrian forms on pedestals in sculpture devoid of vulnerability to the effect of gravity. It was also realized charcoal dust and polyvinyl chloride solution is an effective binding agent for pasting charcoal lumps and a workable casting medium.

CONCLUSION
The study is an effort to unfold the potentialities of charcoal for casting and assemblage in sculpture. It shows that, charcoal can be a prosperous material for three dimensional creative expressions of human and animal figures, geometric forms, abstract forms etc. Artist are therefore encouraged to undertake further explorations of this remarkable medium of expression seeing that its outstanding potentials could yield more important findings.

REFERENCES