

# A PARADIGM FOR METAL DESIGN: THE UNIVERSITY OF BENIN ART SCHOOL EXPERIENCE

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## ABSTRACT

Art expressed through metal design has always been in existence. It is basically aesthetic creation which stems from man's conception of ideas for designs in metals. However, much of these creations evolve not merely out of the designer's artistic prowess, but his use of techniques and equipment. In more contemporary times and with innovations in modern technology, metal design has found its way into Higher Institutions as an Undergraduate degree programme. This article focuses on metal as a material the artist as a designer works with in the production of functional and aesthetic articles. Even though the knowledge of the composition of these metals is vital to the artist, he is not so much concerned with the forms of extraction like the metallurgist's. It is on this score that this article makes a critical assessment of the University of Benin Art School undergraduate metal design programme. To verify its present status as a paradigm for Metal design as a specialized Course of study in tertiary learning.

**KEYWORDS:** Paradigm, Metal Design, Metallurgy, Art school, Applied Art Programme.

## INTRODUCTION

Metal design refers to the use of metal(s) in the fabrication of aesthetically functional objects. 'Jewellery and Silver smithing', 'Metal work', and 'Metal Craft' are some very popular nomenclatures often used in the stead of the term, 'Metal Design'. However, besides the creation of metal objects of beauty, metal design also satisfies utilitarian needs with great impact in the development of technology in contemporary times.

In tracing its origin, metal is almost synonymous with the existence of man. According to Heinz and Dieter (1971:6), for thousands of years, metal has retained its importance as the oldest material known to man, and has had a decisive influence on man's civilization. Looking at this within the Nigerian context, notable cultures in Nigeria like that of Ife, Benin, Tsoede and Igbo Ukwu have had long standing history of metal working (predominantly in bronze and brass). The metal works from these towns are historical statements about the technological acumen of the craftsmen who produce bronze and brass castings. It is important to note that in contemporary times, these cultures not only produce forms for aesthetic value, but also function as medium of producing machine parts and tools. In Nigeria, metal smiths fabricate engine parts as some form of local technology brought about by reduced importation of these parts from developed economies. For instance, Akwa, a town in Eastern Nigeria is popular for its blacksmithing industry. Shotguns, farming implements and tools most times derogately tagged "Ibo-made" are some products churned out by Akwa blacksmiths. Modern technology and urbanization nonetheless, the local blacksmithing craft is still being practiced by Akwa indigenes.

While acknowledging the importance of metals in its aesthetics and utilitarian functions, its academic significance cannot be under-estimated. It is in recognition of this that the Nigerian Universities Commission's White paper (2001:11) emphasized the minimum academic standards for art disciplines. The paper states that arts should be taught not merely to produce painters, sculptors, potters, printmakers, illustrators, textile and graphic designers; but should be taught to influence developments in architecture, urban planning, landscape design, resource management and modern technology, in general. The argument here is that no art form is valid if it does not serve the needs of society especially in this age of technology. It is on this score that this article makes a critical appraisal of the study of metal design as an applied arts course at the tertiary level, with the University of Benin experience as the focus.

Metal design is a specialized course under the Applied Arts Department in the University of Benin. The course is taught and practiced on the thresholds of functionalism, creativity and localization of products. The aim is to encourage the spread of metal design practice and encourage novel working technologies, which are presently under-utilized by Nigerian creative artists. Metal design as a course at the tertiary level is yet to gain popularity in West Africa. In this sub-region, only two Art schools offer metal design. These are Kwame Nkrumah University of Science and Technology in Ghana, and the University of Benin in Nigeria. In the later case, of all tertiary Institutions offering Fine and Applied Arts in Nigeria, it is only the University of Benin that offers metal design as an applied art specializing unit.

However, this present status of metal design in Nigeria tends to place it as 'endangered' and under-utilized. This trend elicits some pertinent questions that tend to underlie the crux of this article. These questions include the relevance of metal design to arts in Nigeria? What economic potential does it hold for its practitioners and the nation as a whole? How much is known of metal design as an art course in the Nigerian educational system? It is the intention in this article to provide answers to the foregoing questions. Thus in the next sub-topic there is an attempt on the clarification of the concept of metal design as an applied art.

## Metal Design as an Applied Art

Art has been defined in many ways. However for the purpose of this article, the word 'art' is used to describe a very broad range of creative activities that are continually changing. These changes are occasioned by reasons ranging from changing lifestyles to improved technologies. The scope of art covers the performing, liberal and visual arts. Art is also the expression of creativity, of pleasure in dexterity, invention, and the ingenious use of natural and man made materials (Microsoft Encarta library, 2002). Visual art which is the focus here is split into two main branches, namely, Fine and Applied arts. Applied arts which has Metal Design as one aspect, are those arts basically concerned with the making of objects to serve particular purposes. Besides Metal Design the Applied Arts has a host of other specialized fields such as graphics, ceramics, textiles, fashion design and other specialties which also have commercial value. Added to these the Applied Arts has other accomplishments such as carvings in Ivory and Jade, the creation of Netsuke, lacquer work, enamels on jewellery, pottery and porcelain (Microsoft Encarta library, 2002). Others include products in mosaic and metalwork, the

execution of wood carving and the weaving of rugs and carpets. Even though some of these accomplishments are often classified as crafts they yet need skills basic to applied arts to give them the finesse of the arts. Generally, what seems characteristic in all of these features of the Applied Arts is the practicability of the outcomes or products. This is what makes the Applied Arts have great impact on our everyday life.

Central to this work is the aspect of metal design, which stems from man's conception of ideas for design in metals. However, metal could be said to be a comparatively new educational material in the applied arts, which is yet going through research and experience, for a better understanding and exploitation of its possibilities. Art expressed through metals has always been in existence. In the opinion of Shirley (1973:151), Metals in art has been there for over five thousand years, when the earliest craftsmen in Stone Age discovered and first exploited metal. This singular feat saw a great step forward in civilization. It moved local technology (then) from stonework to metal. From here metal could then be shaped by bending, beating, melting and by pouring in a molten state, into a mould. The above processes in themselves are central to metal design. This is so for anyone who aims to design in metal and begins with a purpose. Furthermore, every good designer must work within the scope of knowledge and experience. If this is well done, one comes to find that a good design would always survive the changes of fashion and taste. This in fact is what makes metal design outcomes rare qualities.

#### **The Structure and Course Content of Metal Design in the University of Benin.**

Metal Design was first introduced to the Department of Fine and Applied Arts in the University of Benin in 1979 as 'Silver Smithing'. Essentially, the course was aimed at providing middle level technological manpower for Nigeria. Until 1987 the department existed, in the defunct Faculty of Creative Arts as two separate departments. That is, the Department of Fine Art and the Department of Applied Arts. Presently, with a merger, Metal Design exists in the Department of Fine and Applied Arts, in the Faculty of Arts. This department has six units or areas of specialization namely, Painting, Sculpture, Ceramics, Graphic design, Textile design/technology and Metal design. Art History unit is being proposed for specialization. Notably, irrespective of these areas of specialization, there are some general core courses required of the students. These are Drawing, Art Education, Art History and Computer Aided Design (CAD). Generally, the programmes are designed to cater for diverse academic and creative interest of students as well as to prepare students for various professions and administrative job opportunities.

In its early years of existence as the Department of Silversmithing, a Scottish, Mr. Forsythe was in charge. After he left, the course was changed from Silversmithing to Metal design, so as to accommodate a broad spectrum of courses. Since its inception, the department has been producing graduates (of both sexes) in metal design.

Metal design as a specialized discipline in the Department of Applied Arts, and an undergraduate programme is of a four-year duration. This also includes three (3) months of industrial training and field trips for all students in their second and third years. Essentially, the student whose interest is in Metal design does not get full exposure to the course by way of specialization until the third year. The idea is to give

students a good introduction to other aspects of Fine and Applied Arts.

In the first year, the students are exposed to introductory course which spans thro two semesters. The aim here is to expose the students to the fundamentals of Fine and Applied Arts. There are fundamental studies in 2 and 3-dimensional designs from which the students derive some perceptual experiences through the utilisation of a variety of materials and processes. Essentially, in the 2 and 3-dimensional design courses, students are exposed to the use of conceptual, visual and relational elements of design in movements, form, lines, colour, etc.

Also in the first year, students are equipped with knowledge of the nature and meaning of art. The course is more of a general survey of arts (visual and performing) from an anthropocentric point of view. Computer Appreciation is another core course which is introduced to all applied art students in their first year. Knowledge of this course leads the students to express their design concepts using modern day technology.

The second year is yet an introductory class. But this time, it is more of a general introduction in the specialized areas in both the Fine and Applied arts. Basically, the students are introduced to other specializing areas like Painting, Sculpture, Graphic Design, Fashion, Textiles, Ceramics and Metal Design. At the same time, they continue with Drawing and Computer Aided Design that were introduced in the first year. Another important aspect of the course offerings is the introduction of Art History. The aim of this course is to expose the students to the historical development of art with emphasis on the development of art in the Nigerian society. Also, at this stage of learning, the student takes a course in Research methods in preparation for the final year when students are expected to present special theoretical and practical research works. More importantly, it is in the second year of training that the student is introduced to Metal Design for the first time. The focus at this stage is a general introduction to metals and the technology of fine metal works, and possible career opportunities in this field. This actually prepares the students for the rudiments of metal design, while acquainting them with the various challenges in the use of materials, tools and equipment in metal design. The students are also taught the various processes which can best be applied in arriving at well finished metal articles. Significantly too, while the students are taught the many challenges in the use of materials, tools and equipment in metal design, they are also given lessons in the handling and maintenance of same. The students are engaged in elementary problems relating to design, selection of apt tools, and materials best suited to solve practical problems. In attempting to solve such problems, the teachers guide the students in processing their creative ideas. However, the teacher has his limit as guide, bearing in mind too, that the original thought-out design must have emanated from the student. But as prospective metal designers, the students are constantly reminded to strive towards a balance between beauty (aesthetics) and practicality (functionality). At this stage, the students are groomed to put on paper, whatever ideas they have, then develop into sketches, working drawings and actual production as expressed in (figs. 1 and 2). In doing this, the students are acquainted with the essence of sketching, working drawings and annotational notes. Indeed, the second year of training prepares the student for the specializing class.

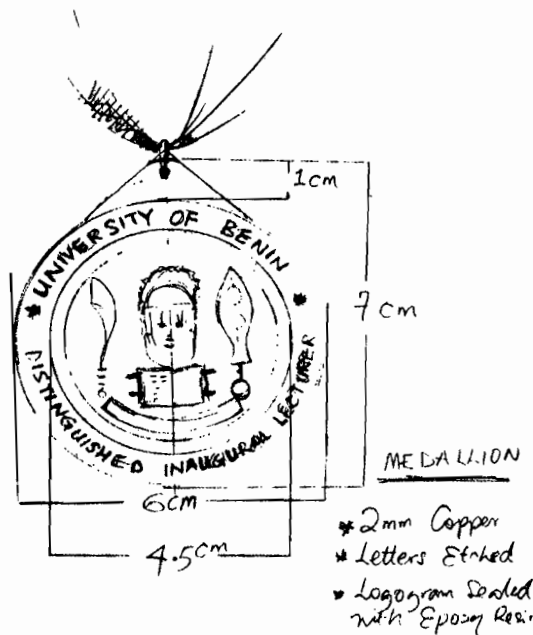


Fig 1: Working Drawing of a Medallion

Fig 2: Medallion (Outcome of Working Drawing in Fig1.)  
Materials: 2mm Copper Sheet and Epoxy Resin

Specifically, a student who takes the option of metal design begins to focus in his chosen career in the third year. The student graduates in the fourth year having completed and

passed in the theoretical and practical aspects of metal design, studio practice and a special project in metal design. Below are the courses offered in the specializing classes (year III and IV) of metal design. These are expressed in the tables below.

**Metal Design Course Content**

Table 1<sup>A</sup> YEAR III FIRST SEMESTER

Course Code(s)/ Title	Courses	Credits
*APM 310	Jewellery I	2
APM 311	Metal Smithing I	2
APM 312	Theory of Metals I	2
APM 313	Metal Designing I	2
APM 314	Foundry Practice I	2
FAD 314	Drawing V	3
FAE 315	Art Education I	2
FAH 316	African Art History III	2
CAD 316	Computer Aided Design V	2
TOTAL		19

\*APM represents Courses in metal design (Applied Arts, Metal design)

Table 1<sup>B</sup> YEAR III SECOND SEMESTER

Course Code(s)/ Title	Courses	Credits
APM 320	Jewellery II	2
APM 321	Metal Smithing II	2
APM 322	Theory of Metals II	2
APM 323	Metal Designing II	2
APM 324	Foundry Practice II	2
FAD 324	Drawing VI	3
FAE 325	Art Education II	2
FAH 326	African Art History IV	2
CAD 326	Computer Aided Design VI	2
TOTAL		19

**Table 2<sup>A</sup> YEAR IV FIRST SEMESTER**

Course Code(s)/ Title	Courses	Credits
APM 410	Jewellery III	3
APM 411	Metal Smithing III	3
APM 412	Theory of Metals III	2
APM 413	Metal Designing III	3
APM 414	Special Project I	3
FAD 415	Drawing VII	3
FAH 416	European Art History	2
TOTAL		19

**Table 2<sup>B</sup> YEAR IV SECOND SEMESTER**

Course Code(s)/ Title.	Courses	Credits
APM 420	Jewellery IV	3
APM 321	Metal Smithing IV	3
APM 422	Theory of Metals IV	2
APM 423	Metal Designing IV	3
APM 424	Special Project II	3
FAD 425	Drawing VIII	3
FAH 426	African Art History Project	2
TOTAL		19

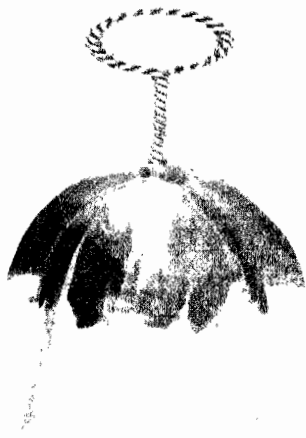
It can be deduced from the above tabular presentation that activities and courses in the fourth year are a consolidation of what was begun in third year of study. Certain courses are introduced with special objectives. For instance, in Jewellery, the main aim is to introduce students to the basic workshop processes in the production and casting of jewellery. Metal Smithing aims at equipping the students with the techniques and practices involved in the construction, fabrication and finishing of ferrous and non-ferrous metals. Besides the practical courses in metal design, students also take a theoretical course in the area of specialization: The course, Theory of Metals exposes students to the theory, characteristics and the nature of metals, and some aspects of metallurgy and chemistry that would provide some theoretical understanding of the underpinnings of metals such as alloy calculations, physical, chemical and mechanical properties of metals. The students' knowledge of these theories is brought to the fore in the execution of specific practical assignment.

Finally, there is the course on Metal Designing, and Foundry Practice, which is designed to offer the students an opportunity to put their creative thoughts on paper by producing 2 and 3-D models of design. It is against this background that students specializing in metal design are encouraged to undertake industrial attachment in the third year of study. The main aim of this Industrial attachment (which is oftentimes done in metal working industries or allied fields) is to expose students to a wide range of metal working methodologies Foundry practice which is taken at the third

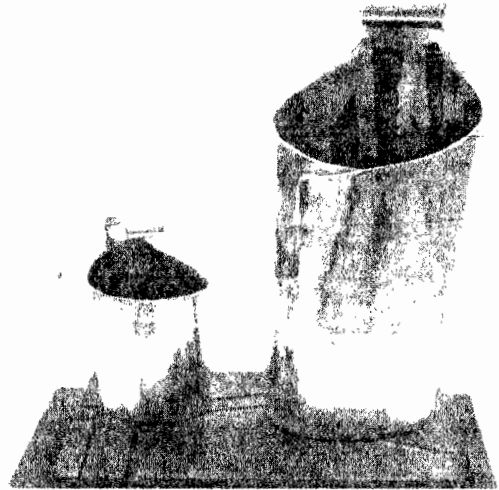
year of study exposes the students to mass production of metal articles via metal casting.

Generally, at the four hundred level, which is the final year, the students are introduced to advanced metal working techniques as well as industrial metal processes in the areas of metal smithing, advanced jewellery production, metal designing and metal finishing. Specific assignments are given to ascertain the students' comprehension of these advanced metal working methodologies (see figs. 3 and 4). At this level of study, products' finishing and presentation are given very special attention. Students are also exposed to electroforming (also called electroplating) of metal articles. At the end of the course work, the specializing students are expected to undertake a special project to demonstrate their understanding of acquired practical and theoretical knowledge. This special project could be in the area of metal smithing, jewellery or metal designing (see fig. 5). The expectation is that at the end of the programme, the metal design graduate is armed with all the basic practical experiences required to go into studio practice in the area of jewellery production, metal smithing and products' designing.

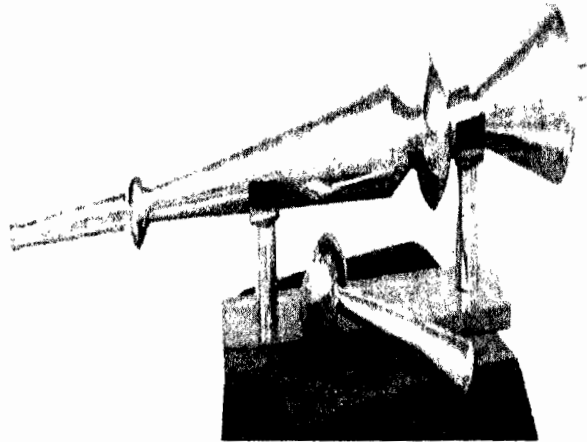
As a way of emphasizing the practical aspect of metal design, the Department of Applied Arts University of Benin in more recent times has expanded its practical scope to the production of ferrous metal furniture and furniture accessories (figs. 6a and 6b). This development may have come as a response to contemporary metal furniture need.



**Fig 3: 'Agogo' Decorative Gong.**  
(A Metal Smithing Assignment to test the Student's Understanding of 'Metal Sinking')  
Material: 1.8 mm Copper Sheet.



**Fig4: 'Mother & Child' Bed Side Lamp.**  
(A Metal Smithing assignment to test the Student's understanding of 'Metal Folding').  
Material: 1.8 mm Brass Sheet.



**Fig 5. Mace and Gavel.**  
(A Special Project in Metal Smithing undertaken by a Specializing Student)  
Materials: 1.8 mm Brass Sheet, Bronze and Wood.



Fig 6a. A Set of Contemporary Furniture Designed and Produced by a Metal Design Student.  
Materials: Steel Pipes, Steel Rod, Brass, Glass and Wood.

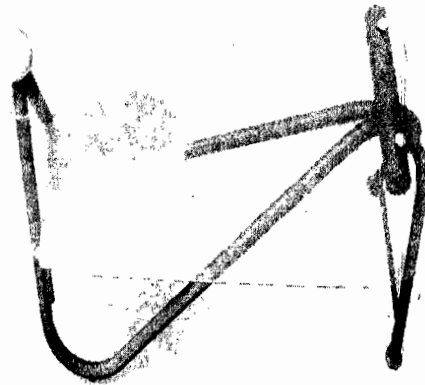


Fig 6b. Aerial View of Centre Table

#### Challenges Facing Metal Design Studies and Practice

One major challenge facing metal design practice in the University of Benin Art School is that of some obsolete and inadequate machineries. Basically, Metal design has jewellery, metal smithing, foundry practice and metal designing (industrial design) as sub units. These unique sub-units ordinarily require peculiar machines for specific studio operations. The absence of centrifugal casting machine, electroplating equipment and precision tools has been a hindrance to the study and practice of metal design in the University of Benin Art School. Moreover, the school needs to acquire equipment for computer aided design (CAD) and electroforming technologies in jewellery production. The application of automated techniques improves the output and quality of jewellery products. The expectation is that in this technological age, a good art school should not only boast of the physical computers in numbers but should provide adequate access to the students. An art student, and in this case, a metal design student who is able to express design concepts using design software, will immediately have an idea of what the finished product will look like on the screen of the computer. This also creates opportunity to make alterations and improvements.

To cut the cost of importing expensive machines and to support indigenous technology, some metal working machines could be fabricated locally. It is in meeting such challenges that in more recent times, the University of Benin Art School teachers and their students have taken great strides in the possibility of fabricating some essential machines locally. This informed a special project carried out by Emeriewen (2004), which addressed the problems faced in sheet metal pressing. In his local fabrication, he adapted an automobile hydraulic jack to design a sheet metal press, which served as an alternative to the manual sinking of non-ferrous metals.

#### Prospects of an Ideal Metal Design Programme

So far, the discussion has centred on metal design as a specialization area in the applied arts, using the University of Benin Art School experience as the case. Following the trend in growth since its inception, there has been the zeal on the part of the University of Benin Art School to create opportunities for undergraduate artist to acquire adequate knowledge and skills in the theoretical and practical aspects of

metal design. Importantly, the goal is to produce graduates who would not only appreciate beauty, but end up as functional, productive members of society. That is, graduate artist who will make significant impact on artistic technology and Industrial developments.

This article has also recognised that metal design as a field of study can best be achieved with the provision of physical infra-structure, modern-day machines and tools, materials and qualified manpower. Even though locally fabricated machines are encouraged (as in the case of Emeriewen, 2004), the crucial need for modern technology (machines and tools) cannot be overemphasised. The idea is that if University Art Schools must produce graduates who will bear the responsibility and challenges of designing and producing non-ferrous and ferrous metal articles in a technological growing world, they, too must be well grounded. Thus, there is need for working machines and tools, materials and adequate studios. This will go a long way to producing individuals who will be prepared to meet the metal design needs of any society.

Essentially, metal design has the potentialities of producing notable items like metal trophies, maces, staff of offices, award plaques, metal furniture and accessories, and some jewellery. Ordinarily, these items are quite expensive and much more expensive when imported. But if produced locally with the necessary aesthetic finesse, especially by trained and qualified metal designers, they could be quite affordable. It is on record that the University of Benin Metal design Department produces trophies and medals for institutions (see fig.7). In 1995, the medals used for the 9<sup>th</sup> West African University Games (WAUG), hosted by the University of Benin, were designed and produced by a metal design graduate of the University. If there is awareness on the production of such items within, the local demand for same will be boosted.

The basic human need for personal adornment has kept the jewellery market booming over the centuries. As opined by Almeida (1967:10), everything designed to be made in metal should have a purpose. One cardinal objective of teaching jewellery under metal design is to imbue the metal design majors with the basic practical skills required for production of jewellery items. If automated jewellery production machines are procured and installed in University of Benin metal design department, it will boost the practical training of

potential jewellers. The multiplier effect of this cannot be overemphasised – robust training of professional jewellers. This is bound to jerk up the output of made-in-Nigeria jewellery items as well as bring some sanity to the Nigerian jewellery production industry. The presence of gold in Nigeria's earth

crust (notably in Ilesha in Oshun State and Igarra in Edo State) and its subsequent mining will be an added advantage in gold items production. Aside meeting local and export demands, productions standards will be set and maintained.



Fig.7 Gong Trophy produced by Metal Design Unit, University of Benin. Commissioned by Government, of Cross-Rivers State (Nigeria) for the National Festival, of Arts and Culture 1989. Material: Silver Plated Copper.

The Metal design department of the University of Benin art school has trained manpower for technical Institutions, Colleges of Education as well as modern foundries and design companies. The Department emphasizes practical training and as such turns out graduates who are productive in the private sector. This has led to the establishment of small and medium scale enterprises by some of these metal design graduates of the school.

## CONCLUSION

Indeed, University of Benin metal design Department has set a pace in metal working. This may not be unconnected with the fact that there is demand for metal products within and outside the country. The myriads of challenges nonetheless, metal design Department yet strives to make its impact felt. There is a dogged resolve by its practitioners to keep the art going. This is evident in metal design outcomes churned out from the stables of some metal designers. To further project the import of this course (metal design), to make more meaning to the Nigerian public, there is the urgent need for art schools and art curriculum developers to create an enabling environment for more art departments to incorporate and commence the offering of metal design and to enlighten the Nigerian populace on the place of metal design in a growing technological world.

The University of Benin Art School may have its challenges, but nonetheless has set a pace towards metal design as a specialization area in the applied arts. The contents of the curriculum run by the school are stimulating. The hope is that with increased effort in improving the academic manpower, providing more functional metal design studios and adequate supply of materials and working tools

and machines, the metal design department in University of Benin would have attained an enviable standard.

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