

## **Radiocarbon Dating and Preservation of Cultural Heritage: A Study of Igbo Mbari Culture**

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### **Abstract**

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Cultural heritage is the legacy of tangible and intangible attributes of a people, group or society that is inherited from past generations. According to Sullivan (2016), it includes tangible culture such as buildings, monuments, landscapes, books, works of art and artifacts; as well as intangible culture in the nature of folklore, traditions, language and knowledge; in addition to natural heritage such as biodiversity. The need to preserve these rare properties has generated heated comments from professionals versed in heritage assessment and valuation, and the people who own these properties. This paper addressed the impact which the application of radiocarbon dating could have on the preservation of the cultural heritage of a people. A study of Mbari Cultural centre Owerri was undertaken. Five cultural objects were selected. These were subjected to radiocarbon analysis to determine their age and place their value as cultural heritage. Questionnaires and interview schedules were used in the collection of primary data while journal and periodicals were relied upon in the sourcing of secondary data. The study adopted and relied on Analysis of Variance (ANOVA) in the analysis which result concluded that radiocarbon dating has great impact in the preservation of cultural heritage of a people. The establishment of heritage preservation units in our universities and centers of learning was recommended among others.

**Keywords:** *Mbari, Radiocarbon, Culture, Preservation, Monuments, Shrines*

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## **Background to the Study**

Culture is central to the evolution and sustainability of man on earth. Accordingly, it is so central to man's existence to be accorded a pride of place in major policies of different governments of the world. The Cultural Policy for Nigeria for instance defines culture as:

*..the totality of way of life evolved by a people in their attempt to meet the challenges of their environment which gives its order and meaning; their social, politics, economics, aesthetic and religious norms and modes of organization, and thus distinguishing a people from their neighbours (FGN 1998).*

Culture is an identity that includes our arts and artifacts, crafts, folktales, folksongs and poetry, music, dance, beliefs, ideas, occupation, technology etc; handed from generation to generation through socialization and education, and are our cultural heritage.

With the foregoing in mind it becomes clear that culture is not just anything but something important and valuable. The importance of culture arises from the fact that without it, there is no knowing; and hence no understanding. Culture is valuable because it is a property capable of ownership and possession. The attributes of ownership and possession to the character of culture presumes and concludes that culture is personalized. The culture of the Igbo reflects those norms and nature of attitudes and behaviors peculiar only to the Igbo people wherever they may be but especially at the Igbo culture area.

The need for the preservation of culture is borne naturally out of the desire for humans to safeguard what is theirs. The Igbo adage “Nkem efuna” which literally translates as “Mine must be preserved” shows the deep attachment people have over their property. When therefore it torches on the way of life of a people, there is the deepest of affiliations, attachments and feelings towards such. Ordinarily, preservation would not arise if the property is not valuable.

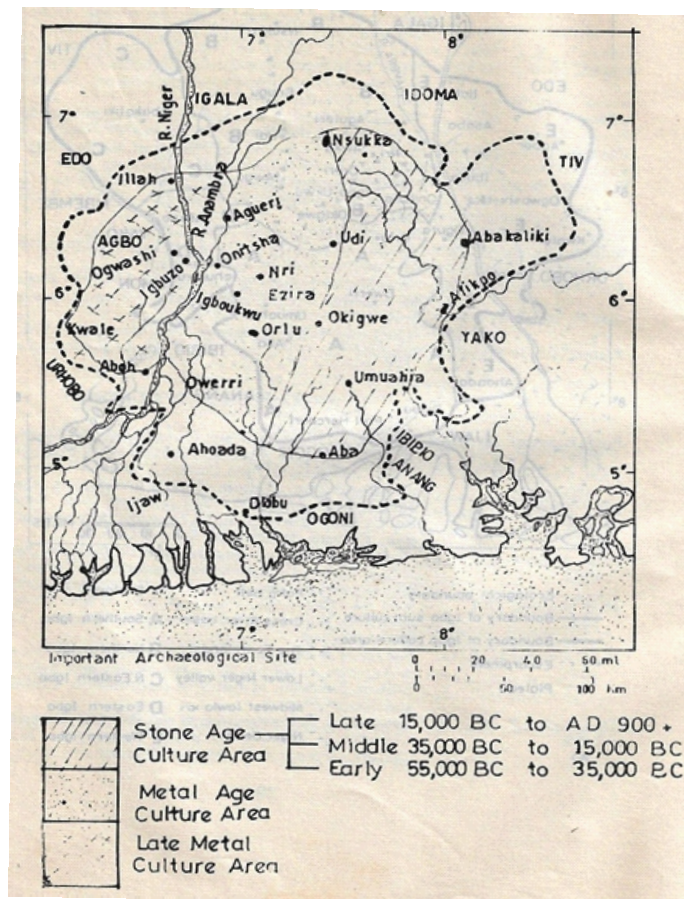
Value of culture and associated materials is described in this study across a variety of dimensions and three main beneficiary groups. The dimensions include instrumental, intrinsic, institutional and use values. The beneficiaries of these values can be individuals, communities and the economy. Instrumental value describes the utilitarian and instrumental benefits that culture can provide for individuals, the economy and for society. The instrumental value of culture is sought through economic benefits such as civic branding, tourism, employment and the multiplier effect on local economies, through social benefits including increased social capital, inclusion, social cohesion, tolerance for cultural diversity, urban regeneration and civic participation and through benefits to individual such as learning, personal wellbeing and health. Intrinsic value gets to the heart of the intangibles of museum and artifacts experiences.

## **Igbo Culture Area**

Owing to the fact that culture belongs to a people, it has boundaries otherwise known as culture area. A culture area according to Onwuejeogwu (1975) is “a geographic delimitation of areas that have the same dominant and significant culture traits, complexes and patterns”. Figure 1, is an attempt by Onwuejiogu to delimit the Igbo culture area. As could be seen from

the map the Igbo culture area is not only the area where Igbo language is spoken but also other areas though the language is not spoken but the ways of life of the people are similar. The customary beliefs, social forms, and material traits of a racial, religious, or social group as well as the characteristic features of everyday existence are shared by the people in the place.

At the heart of Igbo culture area is Owerri. Recently dubbed the Eastern heartland owing ostensibly to its location from all parts of South East Nigeria, Owerri is the capital of Imo State which is one of the five States that constitute South East geopolitical zone of Nigeria. It is located at Latitude 5.48 N and Longitude 7.03E with an elevation of 73 meters above sea level. Founded alongside other major Igbo nationalities, about the 9<sup>th</sup> Century AD (Isichei, 1976) the first monarchy was established during the last quarter of the 17th century about 1670-1680. Ever since, Owerri had occupied a pride of place in Igbo land.



**Fig. 1:** Igbo Culture Area.  
**Source:** Onwuejiogwu (1984)

In any culture area the culture should encompass material, institutional, philosophical and creative aspects. The material aspect has to do with artifacts in its broadest form (namely; tools, clothing, food, medicine, utensils and housing). The institutional deals with the political,

economic, social and legal structures erected to help achieve material and spiritual objectives; while the philosophical is concerned with a people's literature (oral or written) as well as their visual and performing arts which are normally molded by, as well as help to mold other aspects of culture.

### **Cultural Heritage of Igbo People**

The culture of a people is their property. The properties of a people belong to them. When these are cared for and passed from one generation to another, they constitute cultural heritage. Cultural Heritage is an expression of the ways of living developed by a community and passed on from generation to generation, including customs, practices, places, objects, artistic expressions and values. Cultural Heritage is often expressed as either Intangible or Tangible Cultural Heritage (ICOMOS, 2002). Tangible heritage include artifacts such as paintings, drawings, prints, mosaics, sculptures; historical monuments and buildings, as well as archaeological sites. Intangible heritage therefore includes a dizzying array of traditions, music and dances such as tango and flamenco, holy processions, carnivals (Franchi, 2014). It could therefore be concluded that cultural heritage does not consist of money or property, but of culture, values and traditions; implying a shared bond of belonging to a community. It represents our history and our identity; our bond to the past, to our present, and the future. The cultural heritage of the Igbo people crisscrossed these hitherto examined categories and more as Achebe (1984) and Equiano (1789) would insisted on our dances and visual performances, arts and crafts, folk tales in the moonlight,

### **Radiocarbon Dating**

Developed by Willard Libby in the 1940s, radiocarbon ( $^{14}\text{C}$ ) dating is a chronometric technique widely used to date the panoply of organic remains often found in archaeological and cultural sites including artifacts made from bone, shell, wood, and other carbon based materials. It is an easy and increasingly accessible way for archaeologists, anthropologists and sociologists to construct chronologies of human behavior and examine temporal changes through time at a finer scale than what had previously been possible. Variations and improvements in the technique resulted in Accelerator Mass Spectrometry (AMS) in the late 1970s which was a great improvement to conventional radiocarbon techniques such as Libby's solid carbon counting, the gas counting method popular in the mid-1950s, or liquid scintillation (LS) counting. This is because AMS permitted the dating of much smaller sized samples with even greater precision.

The value of radiocarbon dating to science has clearly been appreciated as Clark (1979:7) observed that without it "we would still be foundering in a sea of imprecision sometime bred of inspired guesswork but more often of imaginative speculation." Renfrew (1973) also aptly noted that radiocarbon dating transformed how archaeologists could interpret the past and track cultural changes through a period in human history where we see among other things the massive migration of peoples settling virtually every major region of the world, the transition from hunting and gathering to more intensive forms of food production, and the rise of city-states.

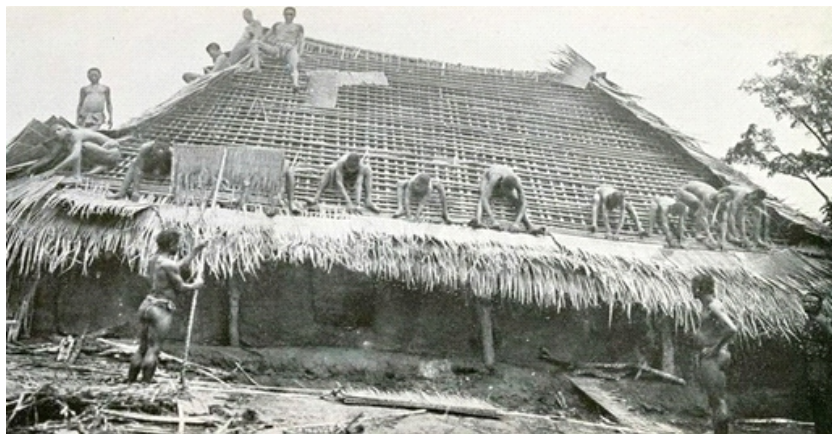




Nigeria. The region lies within the geographical boundaries of longitudes 6° 80' 15" and 7° 18' 10" and latitudes 5° 15' 05" and 5° 38' 10".

Mbarishrines contain elaborate tableaux of painted unfired earth made in honour of the earth spirit. They are large open-sided square planned shelters containing life-sized mud sculptures. These painted figures—sculpted in the form of deities, animals, legendary creatures, ancestors, officials, craftsmen, and foreigners—are made to appease the earth goddess. Oliver and Hess, 2013 observed that monumental temple architecture is rare in Africa, for in animist religions spirits may reside in trees, carved figures, or small, simple shrines. Shrine rooms containing votive objects and dedicated to spirits or ancestors are common. The Mbari houses are elaborate of such architecture where votive objects are found. These were cultural objects that in ancient times were brought to a sacred place or, in later times, to a temple for the purpose of obtaining from a deity either healing or the satisfaction of a request; the objects were also brought to fulfill a vow. The Great Soviet encyclopedia (2010) has records that suppliants hoping to get better, or in gratitude for a recovery, brought images of the stricken parts of the body or of the whole person; in other instances, images were brought of animals, birds, or any objects that suppliants either pledged as a sacrifice or desired to receive. Archaeological objects from the Neolithic period have been found that can be considered prototypes of these objects.

As an art, Mbari does not only fit into such African art with entertainment, political or ideological significance; but also ritualistic and aesthetic value that it more often than not, combines several or all of art elements. Mbari artists may be full-time and part-time while the art forms especially the houses cannot be made by anyone but those chosen. The process of building Mbari houses often takes years and is regarded as sacred.



**Fig. 3:** Constructing Mbari house in pre-colonial times

**Source:** <https://courses.lumenlearning.com/boundless-arthistory/chapter/sculpture-of-the-sub-saharan-civilizations/>

During pre-colonial periods, Mbari houses were not durable as they were principally made of clay/mud. The figurines were also made of heated clay which lifespan was easily affected by weather action. There was therefore the need to regularly construct new ones while old ones are left to decay. With the coming of the Europeans and the improvement in the quality of building materials, cement and blocks were instead being used in the construction process. There has been a departure to zinc and aluminum roofing sheets. Non-the-less, fired clay is still being resorted to in the sculpture works.



**Fig. 4:** Mbari house Uratta Owerri North L. G. A. Imo State.  
**Source:** Edward Chadwick, 1927-1943



**Fig.5:** Mbari house, Obube, Owerri North L.G.A.

The fact that Mbari is practiced by the Owerri area and no other in Igbo land confirms the four distinct variables in African art stylistic identifications. According to....., the first is geography, in that all other things being equal people in different places tend to make or do things in different ways. The second is technology, in that in some areas differences of style depend on the material employed. The third is individuality, in that an expert can identify the works of individual artists; inability to do so usually derives from a lack of familiarity. The fourth is institution, in that the creation of works of art takes place under the influence of the social and cultural institutions characteristic of any given location.



Owerri people have always been known to be cosmopolitan and an egalitarian society where people are allowed to flourish without desecrating or embellishing the culture of their landlords in which case one would be referred to as “Onye Isoma” that is an uncultured person. Though the Owerri people are most times seen as lazy owing to their cliché “anyi tala ugba nuo mmanya, ndi moto ha gbarama” studies have indeed proved that they were the products of colonial upbringing and have continued to emulate the british (nwa bekee) in their attitudes to life.



**Fig. 6:** Mbari house Owerri town.

**Source:** Igbo artist, Nigeria. <https://africa.uima.uiowa.edu/people/show/Igbo>

All over the world, Igbo people of Owerri region who understand and believe in the preservation of their cultural heritage have always done something to protect their culture either through replication of Mbari shrines in their different places or funding the construction of Mbari houses.

As an image of the gods, Mbari is symbolic of the protection God gives to humans. In figure 4 the presence of an image of Chineke, the Igbo high god, never previously imaged to the authors' knowledge; a model anthill -- commemorating the "yam" that was not in fact used here; and a creative departure from the usual stepped buttresses, with plates epitomizes these facts. The architecture of Mbari houses is now being copied by many communities because of its rugged, steep shaped/conical roof and massive pillars.





Mbari in the Museum of Traditional Nigerian Architecture, in Jos

**Source:** <http://247ureports.co/wp-content/2016/01/243-97-3936-hmc015.j>

### **Preservation of Cultural Heritage**

It is an unmistakable fact that heritage is our legacy from the past, what we live with today, and what we pass on to future generations. Our cultural and natural heritage is irreplaceable sources of life and inspiration. Cultural heritage is central to protecting our sense of who we are. It gives us an irrefutable connection to the past – to certain social values, beliefs, customs and traditions that allows us to identify ourselves with others and deepen our sense of unity, belonging and national pride.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) was established to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity. This is embodied in an international treaty called the Convention concerning the Protection of the World Cultural and Natural Heritage, adopted by UNESCO in 1972.

Cultural heritage preservation programs include but not limited to: Digitization of Photographs, Restoration and Conservation, Rescue Archaeology, Preservation, Documentation, Site Development, Development and Publication of languages and dictionary, Specialist Training Course on the Development of Conservation Management Plan, Preventive Conservation of Ethnographic Collections of Museums. These are implemented within the context of relevance of the property to tell a story about the past for the future. In effectuating the foregoing, several preservation methods and practices are available. However cultural preservation and digital preservation seem to take the front burner.

Cultural preservation includes documenting and studying languages; preserving and restoring historic relics significant to a culture or heritage; and encouraging the preservation and use of indigenous or tribal languages and rituals. Every culture has its world view, problem-solving processes, and its take on religion. Stewart (2017) believes that cultural preservation is vital in maintaining our human identities. These individual perspectives are worth preserving because, if we learn from them, they can help us solve our problems. By putting ourselves in someone else's mindset, we learn how to empathize and look at problems in new ways.

The more we let these cultures die out and ignore cultural preservation the more monochromatic and less dynamic our world becomes. Our field of thought narrows considerably when we don't stop to consider the importance of cultural preservation. If we continue to homogenize culturally, we lose the advantage of learning from different points of view. This limits our ability to solve unique problems and could be detrimental in some cases. Preserving the thousands of cultures and languages around the world will help protect these native viewpoints.

Digital preservation is the active safekeeping of digitally stored information. As a part of the formalized efforts of library and archival sciences, digital preservation includes the practices required to ensure that information is safe from medium failures as well as software and hardware obsolescence. In the digital age, preserving information, entertainment and other material involves not only backing up desired content but also caring for and maintaining the storage media upon which the data is stored. Digital preservation is essential to modern history, not least because much information is not stored in any type of hard copy.

Rouse and Haughen (2017) considers digital preservation as necessary because of the challenges facing all digital information: storage medium obsolescence, storage medium failures and software obsolescence. Methods of preserving data include refreshing data and transferring it to fresh media of the same type to prevent data loss from medium failure. Migration (transferring to new mediums) prevents data loss due to obsolescent hardware. In the case of obsolete software, emulators are sometimes used to render content. These emulators then become part of what needs to be preserved. The sheer volume of digital content may present a challenge which management is being addressed.

### **Radiocarbon Dating and Cultural Heritage**

The most essential usefulness of radiocarbon dating is in the determination of the age of objects. Not all objects can be dated with this method however. Radiocarbon dating is essentially useful in the dating of bones, ceramics, and metal, wood etc. It is believed that if one could detect the amount of carbon-14 in an object, one could establish that object's age using the half-life, or rate of decay, of the isotope.

The process of radiocarbon dating starts with the analysis of the carbon 14 left in a sample. The proportion of carbon 14 in the sample examined provides an indication of the time elapsed since death of the sample's source. Radiocarbon dating results are reported in uncalibrated years BP (Before Present), where BP is defined as AD 1950. Calibration is then done to convert BP years into calendar years. This information is then related to true historical dates.

Radiocarbon dating method provides objective age estimates for carbon-based objects that originated from living organisms. The method which has been dubbed “radiocarbon revolution” greatly benefits the fields of archaeology and geology by allowing practitioners to develop more precise historical chronologies across geography and cultures. It has been found most useful in identifying cultural objects which are essential to sociologists, archaeologists and curators in the examination of civilization of a people.

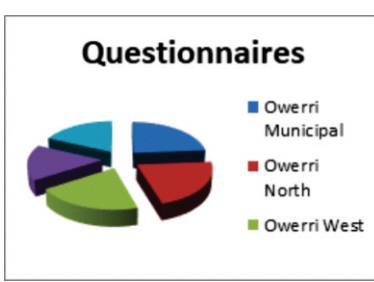
Through radiocarbon dating objects that could be dated which are found within a culture are subjected to the radiocarbon process. Through this they tell the life and times of the community that owned them. It is only where this is accurately done that a precise and objective analysis could be carried out to justify the behavior and characteristics of a community. This will thus be used in piecing together the history of the people for posterity. It is thus clear that radiocarbon dating exposes and exhumes the usefulness of objects that have immense value to the owning community although they may not have much or indeed any market value. This makes them necessary objects for preservation and the propagation of cultural values.

### Presentation, Analysis and Discussion of Results

This paper addressed the impact which the application of radiocarbon dating could have on the preservation of the cultural heritage of a people. A study of Mbari Cultural centre Owerri and other Mbari houses were undertaken. Five cultural objects were selected. These were subjected to radiocarbon analysis to determine their age and place their value as cultural heritage. Questionnaires and interview schedules were used in the collection of primary data while journal and periodicals were relied upon in the sourcing of secondary data. The study adopted and relied on Analysis of Variance (ANOVA) in the analysis of data.

**Table 1:** Distribution and Retrieval of Questionnaires

| S/No. | LGA              | Distribution | Retrieved |
|-------|------------------|--------------|-----------|
| 1     | Owerri Municipal | 70           | 67        |
| 2     | Owerri North     | 70           | 61        |
| 3     | Owerri West      | 70           | 58        |
| 4     | Mbaitoli         | 70           | 45        |
| 5     | Ikeduru          | 70           | 51        |
|       | TOTAL            | 350          | 276       |



**Table 2:** Cultural Objects found at Mbari Houses

| S/No | Object                    | Average Age | Remarks        |
|------|---------------------------|-------------|----------------|
| 1    | Effigy                    | 126         | Good condition |
| 2    | Divination shell (Cowrie) | 221         | Good condition |
| 3    | Ikenga/Ofo                | 153         | Good condition |
| 4    | Bell                      | 105         | Good condition |
| 5    | Slit drum (Ekwe)          | 97          | Good condition |

Many cultural objects were seen at the different Mbari houses visited. Five categories of these objects were selected and subjected to radiocarbon analysis to determine their ages. The essence of doing so is to appreciate for how long the communities were willing and able to hold on to these objects for the purposes of serving Mbari houses. Restated, Mbari houses are like museums where the earth goddess “Ala” is venerated.

The study applied the Variability model (Okoronkwo, Egolum 2015). These were further subjected to Radiocarbon Valuation model (Okoronkwo, Emoh & Ogbuefi, 2019) in assessing the value of the objects which result is depicted in Table 3.

**Table 3:** Valuation of objects at Mbari Houses

| S/No | Object                    | Average Age (Yrs) | Valuation (N) |
|------|---------------------------|-------------------|---------------|
| 1    | Effigy                    | 126               | 3,413,700     |
| 2    | Divination shell (Cowrie) | 221               | 1,385,000     |
| 3    | Ikenga/Ofo                | 153               | 5,675,150     |
| 4    | Bell                      | 105               | 864,380       |
| 5    | Slit drum (Ekwe)          | 97                | 659,650       |

To test the Null hypothesis the ages of cultural objects at Mbari houses and their value were subjected to Analysis of Variance (ANOVA)

**Table 4:** Data Summary

| Groups | N | Mean    | Standard Deviation | Standard Error |
|--------|---|---------|--------------------|----------------|
| 1      | 5 | 140.4   | 49.998             | 22.3598        |
| 2      | 5 | 2399576 | 2131394.2749       | 953188.4971    |

**Table 5:** Anova Summary

| Source         | Degree of Freedom (DF) | Sum of Squares (SS) | Mean Squares (MS)  | F. Statistic | P. Value |
|----------------|------------------------|---------------------|--------------------|--------------|----------|
| Between Groups | 1                      | 14393227996368.4    | 14393227996368.4   | 6.3367       | 0.036    |
| Within Groups  | 8                      | 18171366230305.188  | 2271420778788.1484 |              |          |
| Total          | 9                      | 32564594226673.586  |                    |              |          |

Thus, we reject the null hypothesis that there is no significant difference between the means which therefore implies that the ages of the objects have great bearing on the values. Thus, the older the objects, the more the value to the people and the longer the people will preserve the objects.

### **Summary, Conclusion and Recommendations**

Mbari is a culture, a shrine and a ritualistic symbolism of the gods. Mbari is symbolic of the protection God gives to humans. Though Mbari houses were built of mud, clay and thatch in earlier times because of the technology available at the time they are now built more durable materials. The sculptures are still being made of heated clay and mud because of the basics of culture which goes to show the impermanence of life and human struggles. The houses contain several cultural objects that have great value especially to the owning community and as such require preservation for the propagation and sustenance of the culture of the people.



The need for the preservation of our culture cannot be over emphasized. Consequently, it is recommended that;

- a) Public awareness and mass education of the people on culture and values should be resuscitated to engender participation in preservation of cultural heritage.
- b) The Nigerian cultural policy of 1988 should be revised to include particular aspects of preservation of cultural heritage. As the policy is, the particulars of expected activities of our cultural ambassadors are shrouded in omnibus concepts thereby allowing negligence of required activities.
- c) Culture is central to human existence. That our cultural heritage is allowed to wither speaks volumes of our aversion to growth. It is therefore necessary that the curriculum of our institutions of learning be adjusted to take proper care of cultural education.
- d) Radiocarbon analysis is not performed in Nigeria. It is a shame that none of our revered universities has a radiocarbon laboratory thus forcing researchers to conduct their investigations and analysis in Europe and America. It will be most appreciated if the establishment of an Accelerator mass spectrometry (AMS) laboratory in our institutions especially those teaching archaeology.

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