Assessment of the Management of Museum Storage Units at The National Museum of Tanzania: Reality and Challenges

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ABSTRACT: Museum storage units are crucial in protecting and preserving the museum's precious collections in the most effective and efficient way. A well planned and organized storage system not only increases the level of preservation but also helps in organizing the collections it hosts (NPS Museum Handbook, 2012). However, many museums across the globe are faced with challenges of improper and ineffective storage units hence risking the safety and security of museum objects. As such, the museums' essential roles and functions including research, exhibitions, conservation, acquisition and education are hampered. Based on in-house research, this paper explores the reality of collections' storage units and systems at the national Museum of Tanzania (NMT) which has been in existence since 1940. During data collection, methods including Museum Storage Survey Method (MSSM) and Desktop Works Method (DWM) were applied to collect information for the study.

KEYWORDS: Storage, collections, deterioration, preservation, conservation, museum.

1. NTRODUCTION

A storage unit is the core of museum where usually about 90% of the collection is kept. As such, fixtures that support good environmental condition that allow free air circulation in any museum storage room are of paramount important (Christensen et all., 2016). Proper storage of museum collection must be well accessible by the public and museum staff. Housekeeping activities, conservation, curation as well as researches are core functions of museum that are sometimes conducted within the storage. For this reason, documentation of museum collections and shelving for easy retrieval and accessibility is very important. This paper explores the management of storage units and systems at two NMT centers storage units including the ones at Museum and House of Culture (MHoC) and Village Museum (VM) all of which are in Dar es Salaam. Previous state of preservation and the current situation in National museums of Tanzania are clearly assessed and discussed in order to stimulate storage improvement in museums and recommend proper environmental condition for sustaible preservation of museum collections.

2. HISTORICAL BACKGROUND OF NMT

The National Museum of Tanzania (NMT) is a Government Institution established under the National Museum Act, No.7 of 1980 and charged with collecting, conserving, displaying and researching all materials relating to Tanzania's cultural and natural heritages. The history of management of cultural heritage in Tanzania dates to the year 1900, during the German colonial period when the first collections were made while constructing the central railway line. Also, establishing a museum in Tanzania's mainland (by then Tanganyika) began during German colonial rule in 1912 when a German geographer, Dr Hans Meier, offered funds to build a museum in Dar es Salaam. This idea was then picked up and consolidated by Sir Harold Mac Michael, the Governor of Tanganyika Territory, during the British occupation (1934-1938). Following the death of King George V in 1936, funds were raised from the public and government to build a memorial museum for Him. The King George V Memorial Museum was opened to the public on 7th December 1940, by the British Governor of Tanganyika, Sir Mark Young.

After Independence, efforts were geared to popularize the museum, and it was decided that two new wings must be built; one to house the Department of Antiquities and the other to add exhibition halls and storage rooms. The construction of these new wings started in 1963 and was completed in 1964. After that, the King George V Memorial Museum and the two added new wings were renamed the National Museum. More collections were collected, and national laws and regulations concerning the protection of

cultural heritage were enacted, including the National Museum of Tanganyika Act of 1963, which was later amended by the National Museum Act No.37 of 1965. In 1980, the National Museum was renamed the National Museum of Tanzania (NMT) following a proclamation of the National Museum of Tanzania Act. No. 7 of 1980. Currently, NMT incorporates seven museum centers, including:

- The Museum and House of Culture (MHoC) and Headquarter of NMT located in Dar es Salaam along Shaaban Robert Street;
- The Village Museum (VM) in 1966 located at Kijitonyama area, Dar es Salaam along Ali Hassan Mwinyi Road;
- The Arusha Declaration Museum (ADM) which is in Arusha, along Kaloleni Street;
- The National Natural History Museum (NNHM), located along Boma Road and in the early 20th Century German Boma (or fort) in the heart of Arusha City;
- The Mwl. Julius Kambarage Nyerere Museum (MJKNM) is in Butiama, a town in Mara Region,
- The Maji Maji Memorial Museum (MMMM) which is in Songea town, in Ruvuma; and;
- The Dr Rashid Mfaume Kawawa Memorial Museum is located in the Bombambili Area in Songea town.

3. LITERATURE REVIEW

It was published in UNESCO (1979) reports that collections must be preserved in good condition, good records must be maintained, and both the collections and records must be accessible if they are to be of value in serving the needs of the museum's other roles. The primary objective of proper collection storage in any museum is to ensure preventive care of collections. ICOM (2017) revealed the significance of preventive conservation as "an important element of museum policy and collections care and is an essential responsibility of members of the museum profession to create and maintain a protective environment for the collections in their care, whether in store, on display, or in transit'. As Antonio Paolucci stated, "the storage facilities are for the museum like our internal organs are for our eyes and skin" (Carolina Di Biase, 2010). A storage is the core of museum where usually about 90% of the collection is kept. Therefore, fixtures that support good environmental condition that allow free air circulation in any museum storage room are of paramount important as it was concluded by Christensen et all. (2016) "that storage buildings for museum collections must provide a steady climate, where especially a steady relative humidity below 60% is essentiall and also the high air tightness enhances the homogeneity of the indoor environment".

A perfect museum collection storage with appropriate facilities and fixtures depends much on the amount of resources allocated to the collection role. This directly affects the type of storage systems the museum can afford and the extent and quality of space which can be made available for storage. Poor storage of museum collections has often been a result of limited resources or an imbalance in the allocation of funds to the different departments of a museum (Lindblom, 2003). Thus, at NMT this imbalance has also long prevailed concerning the distribution of resources between public activities and care for the collections.

Proper storage of museum collection must be well accessible by the public and museum staff. Housekeeping activities, conservation, curation as well as researches are core functions of museum that are sometimes conducted within the storage. For this reason, documentation of museum collections and shelving them for easy retrieval and accessibility is very important. The accessibility and visibility requirements of a museum's collections, which are determined by how the collections will be used, will affect how efficiently the volume within the storage areas can be used (UNESCO, 1979). Accessibility of collections within the storage become easier only if collections are well documented according to accepted professional standards. Such documentation should include a full identification and description of each item, its associations, provenance, condition, treatment and present location. Such data should be kept in a secure environment and be supported by retrieval systems providing access to the information by the museum personnel and other legitimate users (ICOM, 2017). Storage documentation goes hand in hand with labelling. According to ASIS International (2013) "collections should be labelled with object numbers and llabels should be applied in such a manner that the label does not disappear or damage the material".

4. METHODOLOGY

This study used a qualitative approach to determine storage facilities, fixtures and fittings at the museum of Tanzania (NMT). Out of seven (7) NMT museum centres, only two collection stores from the Museum and House of Culture (MHoC), formerly known as the King George V museum and Village Museum (VM) were sampled to be assessed based on three aspects of storage facilities, fixtures and fittings. A triangulation of data collection methods including Museum Storage Survey Method (MSSM) and the Desktop

Works Method (DWM) were applied to collect reliable information for the study at hand. In addition, personal observation was used along with MSSM to gather information about actual situation or behavior through physical checkups of the activities or processes. As noted by Bell (2005:184) "Observation can be useful in discovering whether people do what they say they do or behave in the way they claim to behave".

Therefore, the findings were analysed by using Museum storage Survey Method that was applied by visiting the museum to observe the curatorial activities within the storage and check the availability of facilities, fitting and fixtures while the later method (DWM) was used to extract different arguments and clues from various publications on how Museum storage management is being perceived by scholars and multidisciplinary experts. This method is meant to complement the findings obtained from the Museum storage survey method.

5. STUDY FINDINGS

This section presents findings observed on the past and present situations and experience of storage units at the National Museum of Tanzania (NMT). NMT has been preserving collections on open shelving units, in closed door cabinets, in flat storage (such as drawers), and in acid-free boxes and bags of various sizes and Shapes. Sub-sections below give details of findings regarding the management of storage units and systems at the national Museum of Tanzania (NMT), specifically at MHoC and VM.

5.1 Collection storage at the Museum and House of Culture (MHoC) from 1940 – 1960s

The Museum and House of Culture (MHoC) is located in Dar es Salaam along Shaaban Robert Street. This is the largest Museum in the country with collections and exhibitions covering the fields of Archaeology, Biology, Ethnography, History, Arts as well as historical cars. Sub-sections below present the situation of collection storage in different periods.

The collection storage situation between 1940 – 1960s

At the Museum and House of Culture, collection storage management draws its roots from colonial period in 1940 when the King Gorge V Building was officially opened by the British Government. Objects were being stored in unprofessional manner. Facilities fixtures and fittings were very poor and of course there were no professional curators and conservators during that era. The study reports different versions of storage facilities that were procured by NMT to carter the requirement of each period. To mention few, the National Museum of Tanzania has been preserving collections on open shelving units, in closed door cabinets, in flat storage (such as drawers), and in acid-free boxes and bags of various sizes and shapes. Most of the storage units at NMT had poor ventilation system and AC were not available. Open shelving units allowed collections to be exposed to excessive heat, dust and light all of which are dangerous for the lifespan of objects. During the study, it was also observed that one of the storage racks which was used to preserve ethnographic objects in the King Gorge Building, was found to be very crude compared to the current ones. Corrections were not safer because of their poor accessibility and the wooden materials are not suitable for ethnographic objects because, untreated wooden cabinets are more susceptible to insect infestations which in turn destroy collections.

MUSEUM   ARCHITECTURE
DATE: Febr. 1972
LOC.: Store in New Building
SOURCE: Annual report 1971-72
SUBJECT: Construction of the partition of the technicians working space. Designed by Emil Singinika and Juma Kiswezwe. Made by them and by the carpenters.
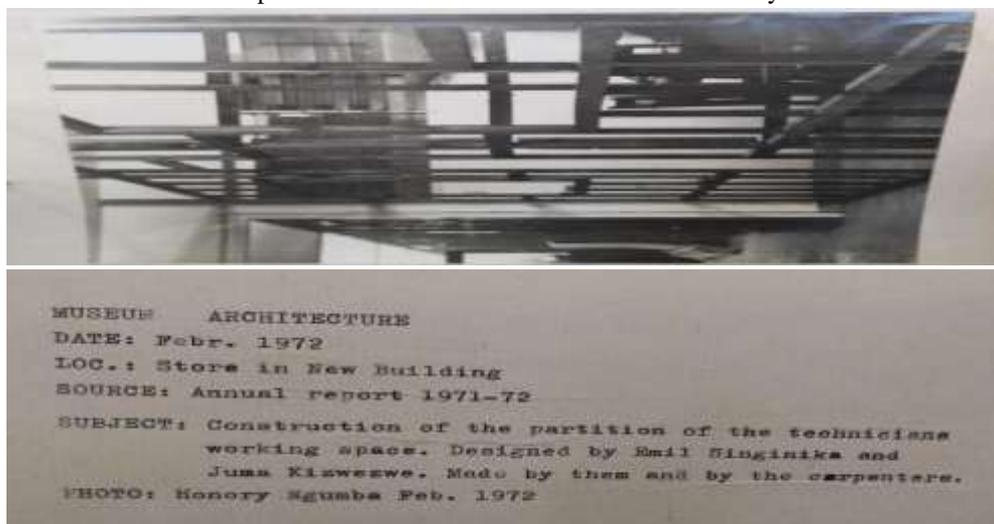PHOTO: Honory Ngumba Feb. 1972

Figure 1: A photo of a storage rack that was used to preserve museum collections in King Gorge V building since colonial period up to 1960s and 1970s.

Museum storage facilities between 1960s and 1990s

In this period preservation of museum collections got a new pace. At the Museum and House of Culture for instance, during the design of House of culture buildings, visible storage technique was previously adopted as one of the methods of maximizing public access to museum collections held in repositories and storage rooms. However, curators' working offices are closer to collection storage rooms, a situation that which attracts insects in the storage due to food garbage and left-overs by curators. UNESCO (1979) revealed that the concept of visible storage is a controversial issue which has triggered much debate over the past several years. Some scholars claim that the limited access to closed collection storage makes research difficult for scholars and presents a distorted view of the cultures that are represented in the exhibition. They feel that exposing the entire collection, and its documentation, can have a catalytic effect on students, researchers and artists, as well as on the public, and that it is easier to compare regional styles and investigate minute variations within a style.

Concerning accessioning of objects and artifacts, it was interested to note that at least some collections were accessioned with their accession numbers recorded in a digital documentation system designed by NMT's ICT department. The challenge however, is that there is inadequate fund to facilitate finalization of documentation. As such, a good number of objects is yet to be documented in the system as they lack specific accession numbers, with missing information, some unidentified, while some are not properly accessioned. According to American Alliance of Museums (2012), accessioning is the formal act of legally accepting an object or objects to the category of material that a museum holds in the public trust. To this end, it is therefore very difficult to locate objects in the racks, shelves or boxes which in turn limits accessibility by staffs, researchers and the public.

Figure 2: An old cabinet that was infested and worn out at the Museum and House of culture. It was used to keep archaeological collections until 1990s.

Current Storage facilities, Furniture and fitting

The study indicates that, generally there is an improvement of storage facilities at the National Museum of Tanzania. For instance, in the sections of Biology, Palaeontology, History and Archaeology a lot of improvement to re-organize storage system have been done especially after getting the COVID -19 relieve funds that the government of Tanzania has had distributed to her Ministries, Departments and Agencies. Experience shows that since 2010 to date several collection storages at NMT have been refurbished and new facilities procured. However, due to inadequate fund those facilities such as furniture, fixtures and fitting are not enough to accommodate all collections available per each department or section. In almost all storage surveyed in due of this study, none of them had all their collections in shelves, racks and in cabinets. Some of the objects are placed directly on the floor or on trays contrary to requirement of the professional codes of museum ethics.

Furthermore, it was observed that there are no smoke detectors connected to an alarm system in the storage room and in adjacent rooms and those available are not in working order. The space within the storage is inadequate especially in artistic collections storage compared to the available quantity of collections. In this regard, professional conservators such as (Brigid S, 1990) advice that "if possible, shelving units should not be placed against exterior walls because they are often cooler than ambient air temperatures, resulting in conditions ideal for condensation of moisture which could damage objects. Perimeter placement of shelves is also not the best use of space".

Figure 4: Paleontological and Artistic collections stored on the surface due to lack of enough cabinets/shelves/racks

Figure No 5. Some of the modern metal racks in the History and Biology sections at NMT

5.2. The Village Museum (VM)

The Village museum (VM) which is in Kijitonyama area-Dar es Salaam, was established in 1966. It is an open-air museum showcasing and preserving traditional architectures, cultures, and associated material cultures of more than 120 Tanzania's ethnic groups. As a of cultural heritage, VM has been researching are acquiring volumes of ethnographic collections that depict culture of Tanzania communities. Every year, one among the 120 ethnic groups in Tanzania is given a four-day opportunity to cerebrate and show case its culture including traditional dances, local cuisine, dressing style, traditional medicines and other related norms and traditions. As such, acquisition of objects and artifacts from these ethnic groups became overwhelming in unofficial and temporal storage in one of the Swahili local house within the village museum.

The VM storage was too local in such a way that it could not protect the collections preserved in it. The roof was palm leaves hatched of which allowed water leakage during rain seasons. Its walls, which were made of tree logs and soil plastered, had small halls which allowed insects to penetrate and affect ethnographic objects. Further, because of the nature of the storage, relative humidity and temperature was impossible to control as no AC could be fixed in such a traditionally built house.

Figure 3: An old storage of ethnographic objects at the Village Museum

Based on the challenges associated with the Village Museum storage unit, the National Museum of Tanzania earmarked a room in the main building and converted it into a storage. Modern facilities including steel mobile shelves, racks and cabinets were purchased for the protection of collections. Similarly, ACs were fixed to ensure temperature was put under control all the time for the longevity of museum objects.

Figure 4: A re-organized storage of ethnographic objects at the Village Museum

6. DISCUSSION

The paper has presented a reality about storage conditions at the National Museum of Tanzania particularly at the Museum and House of culture as well as Village Museum. It was observed that, despite the efforts being instigated by the NMT management to ensure preventive conservation of collections, there are still some challenges. The issue of temperature, relative humidity fluctuation and mould growth in storage are still a serious challenge that threaten museum collections. Subsections below, provides a discussion of what was observed during the survey.

6.1 Temperature

The study observed that, an Archaeology storage which is housing mostly lithic and fossil collections with evidence of cradle of human kind and evolution of culture; has light measurement that reads at 360 to 400lux. This invariably necessitates an increase of temperature at approximately 29 °C in the noon. This challenge may lead to deterioration of collections by heat absorption and cracking of lithic collections. According to Padfield (2009), temperature control in the storage is considerably important. As stated in theories of chemical kinetics, rising of the temperature practically means an increment of molecular vibration, which in turn can cause an exponentially increasing reaction rate of decay processes. As such, temperature fluctuations may result in mechanical decay, caused by the dimensional changes from the expansion and the shrinkage of the objects (Christensen & Janssen, 2009).

In this regard, Christensen & Janssen (2010) denotes that, sufficient thermal insulation of the building helps to reduce the external temperature and solar radiation to have very limited influence on the indoor temperature and its amplitude. Thus, NMT through this study is advised to ensure that Archaeological collection storage should be refurbished and fixed with proper storage fixtures and fittings that will ensure temperature regulation takes place accordingly. This is important as it will help minimise deterioration of objects that may be caused by unstable temperature (Temperature fluctuation), leading to dimensional changes from the expansion and the shrinkage of the objects. In tropical areas of East African countries Tanzania included, where temperature rises to 30ºC, the use of Air conditioners to regulate temperature within the museum storage is highly recommended.

6.2 Relative Humidity

Lowering the temperature in museum storage increases the longevity of collections. A good storage building for most museums' objects must have a stable relative humidity of about 40-50% and a temperature which does not exceed 18 ºC (Ryhl-Svendsen et al. 2012; British Standard PD (2012)). Collection storage at NMT occasionally face the challenge of *Relative Humidity* fluctuation, a situation that endangers the longevity of collections. The fluctuation of relative humidity can lead to chemical, mechanical as well as biological decay. It is therefore recommended that NMT should strive to maintain standard temperature and relative humidity in all its storage units to protect collections from decaying. Although there is no single relative humidity range that is ideal for all museum objects, a constant relative humidity (at a value between 45-60%, 13-16ºC) is recommended.

6.3. Mold growth

The study assessed concerning mold growth in NMT storage units. Availability of mold leads to the production of VOC's (Volatile Organic Compounds) and various toxins, which can provoke allergic reactions to museum staff, researchers and the public. According to Christensen, J. et al. (2016), Mold needs humid conditions below 65 -700% to grow. This survey revealed that, NMT is trying to observe these standards but following the limited financial resources it has, mold grows in various storage due to infrastructural leakages. The Palaeontology storage at MHoC has a serious leakage of rainy water that gets through structural cracks. Further, the storage experiences periods of very humid climate beyond 70% RH putting a high risk of severe mold attack. Figure 7 below, demonstrates some of the affected artifacts at one of the storages at MHoC.

Figure7: Art objects that were affected by mould at Museum and House of Culture: Before treatment

Figure No. 8 Art objects that were affected by mould at Museum and House of Culture: After treatment

6.4. Furniture

The last important component in museum collection storage that was assessed was the furniture. Museum storage furniture aims to ensure objects receive protection against various decay agents including dust, exposure to intense light level, inappropriate temperature, inappropriate relative humidity conditions, pests, poor handling and pollutants (Southwest Solutions, 2024). It is recommended that; museum storage furniture should not be difficult to access. The existing status of NMT storage furniture is generally good following the recent improvement of storage facilities in all seven museum centres under the National museum of Tanzania. As highlighted above, collection storages at NMT have been refurbished and new facilities procured. The available furniture and facilities include shelves, racks and in cabinets. However, based on an available volume of collections that NMT has, the storage furniture and facilities are inadequate. This means that, some museum collections are forcefully staked in few storage facilities available denying smooth accessibility of objects.

In a bid to minimize the challenge of collections inaccessibility and longevity, NMT has through ICT department has managed to develop the museum collection system where all collections are registered on a special database. However, there has been a gradual progress in registering all museum objects due to inadequate knowledge and skills in using systems, luck of recommended digitization facilities such as cameras, 3D scanners and software that could not only enhance the management of digital documentation of objects but also facilitate easy accessibility of collections within the museum storage.

CONCLUSION

It is agreed among scholars and professionals that Museum storage units are key in every museum for the protection and preservation of collections. Despite this fact, many museums including the National Museum of Tanzania have had experienced such challenges as improper and ineffective storage management hence endangering the safety and security of objects. An in-house research survey conducted at the storage of Museum and House of Culture and Village Museum has indicated that NMT's past storage challenges were real. Although efforts to re-organize collection storage have brought some improvements, still more strategies need to be forged to do away with such challenges as collection overcrowding, inaccessibility, improper environmental condition and inadequate storage facilities all of which are agents of objects damaging.

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