

Conservatory Methods of Contemporary Stone Sculpture: The Case of Two Galleries in Zimbabwe

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Abstract

Zimbabwe stone sculpture, has developed as a distinct and unique tradition in the last half of the 20th century. Several authors that include Winter-Irving (1993; 2003), Sultan (1994) and Mor (1987) have written about its nature, peculiarity, development, challenges, artists and marketing (Kennedy, 1992). The published material has largely promoted the production of more and better sculptures, many of which have become of world acclaim, but has ignored the aspect of preservation and conservation of the heritage. This article discusses the several aspects that have been published about Zimbabwe stone sculpture¹ and how the issue of conservation has been continuously missed out. A qualitative methodology was used. It involved interviewing artists, curators, analysing stone sculptures and documentation as well as making an assessment of the state of sculpture on display at two galleries. Research findings indicate that artists and curators are generally informed about types of stone used for sculpture. However, they had limited knowledge about their chemical composition that subsequently determine conservatory approaches applicable to individual stone types. Conservation was limited to polishing to retain stone luster and proper packaging to avoid breakages. The study recommends introduction of deliberate programmes on care of stone sculptures that are a valuable heritage to Zimbabwe.

Keywords: *Contemporary stone sculpture, conservation of sculpture, Zimbabwe stone sculpture, sculpture stones.*

Background to the Study

Zimbabwe stone sculpture can be traced as far back as the Great Zimbabwe² era (Sibanda, 2005; Matenga, 1998). The art involved carving of figurines, for example, the Zimbabwe birds that were sculpted between AD 1250 and 1500. The sculptures were representations of the society's spiritual links with the unseen world.

After the decline of the Great Zimbabwe tradition around 16th century (Garlake, 1994), sculpture only re-emerge as a movement of formidable force in the mid 20th century. Stone sculpture has been taught in formal institutions such as Cyrene and Serima mission³ and informal establishments such as Tengenenge and Vukutu⁴ (Leyten, 1994). In 1957 Mc Ewen started an art school at the National Gallery of the then Rhodesia, now the Gallery Workshop School. Unlike Edward Paterson of Cyrene mission and Father Groeber⁵ of Serima mission who had Western pedagogical approaches to art, Mc Ewen encouraged artists

¹ Zimbabwe stone sculpture was originally known as Shona sculpture. This notion was later dismissed after the realisation that not all sculptors were Shona (See Roberts, 1979). Some were of different ethnic groups while others came from other countries in the Southern Africa Development Community (SADC) region such as Angola, Malawi, Mozambique and Zambia. This means there was a diverse repertoire of African cosmological and mythological orientations among the artists particularly among the Tengenenge Sculpture Community.

² The Great Zimbabwe (houses of stone) is architectural stone monuments built by the Bantu. They are radio carbon dated 1300 to 1350.

³ These were the early missionary establishments that introduced art education in the then Rhodesia. Cyrene was established in 1938 while Serima was instituted in 1948.

⁴ These were informal institutions that introduced stone sculpture to the indigenous people. They were established when Zimbabwe (Rhodesia then) was under sanctions in the 1960s to give farm workers some form of employment. Their sculptures were exhibited at the established Gallery in Harare (in 1957 by Mc Ewen) and exposed to the international market.

⁵ The pioneers of art education in Zimbabwe who established the first art schools. Cyrene focused on painting while Serima had thrust towards wood sculpture.

to draw inspiration from indigenous cultural, mythical and cosmological themes (Stanislaus, 1992; Winter-Irving, 2003) because art was an extension of daily life. Now contemporary sculptors in Zimbabwe use stones such as serpentine in its various categories, marble, granite, limestone and verdite. Sculptures from these stones are stored, displayed or exhibited in interior and exterior environments, exposing them to various threats leading to their eventual deterioration. This calls for studies on the chemical and physical characteristics of these stones and possible threats so that mitigatory measures are taken to save the sculptures from accelerated decomposition.

Conceptual Framework

One of the early writers on Zimbabwe stone sculpture, Arnold (1986) looks at the formative years of the heritage. The author looks back at the symbolism of the 11th and 14th centuries Zimbabwe birds⁶ and the iconography of the monoliths at Great Zimbabwe. She also discusses form and content of sculpture including human, animal and the supernatural. The author's most significant contribution is her suggestion that contemporary stone sculpture, bases its semiotic ideas on the Great Zimbabwe tradition of sculpture (Arnold, 1986). This inspirational book, is however, silent on issues of stone sculpture conservation.

Cousins (1991) articulates controversies about Zimbabwe stone sculpture and how it has been identified as a political commodity even prior to Zimbabwe's independence in 1980. Cousins argues that, while Zimbabwe stone sculpture symbolises national and cultural identity the art remains alien to most Zimbabweans as the majority is indifferent towards it. On the other hand, Joosten (2001) presents a chronology of stone sculpture in Zimbabwe and biographies of the first generation⁷ of stone sculptors who have been influential since the beginning of the movement in the 1950s. In Joosten's work are chronicled personalities such as Edward Paterson, and Father Groeber who opened mission schools to teach the art to the black indigenous people. Kennedy (1992) chronicles the formative years of stone sculpture, with emphasis on sculptors such as Sylvester Mubayi, Joseph Ndandarika, John Takawira, Henry Munyaradzi and Joram Mariga. He is equally silent on issues of stone sculpture conservation. Like many other authors, Joosten (2001), Mawdsley (1994) and Kileff and Kileff (1996) celebrate the success of sculpture teachers, sculptors and sculpture itself but somewhat pay no attention to the materials used and how these should be looked after in order to lengthen the sculptures' life-span. While all the authors view Zimbabwe stone sculpture as an important heritage worth preserving for future generations, none of these writers and commentators has outlined steps towards the conservation of the heritage.

Sculpture Stone and Related Threats

Sculptural rock is found in three main geological categories, namely, igneous, sedimentary and metamorphic rocks, based on their geomorphological formations (NPS Museum Handbook, 2000). Igneous rocks are generally hard and stable comparatively, because of their interlocking crystalline structure. Such rocks include granite, basalt, obsidian and porphyry. Sedimentary rocks are a result of the solidification and or cementing together of layers of organic and mineral sediments. Examples include sandstone, limestone, alabaster and travertine. Sedimentary rocks are often soft and easy to work with, the major reason why most up-coming artists choose them as sculpting media. Metamorphic rocks on the other hand are a result of the transformation of igneous or sedimentary rocks due to great heat and pressure. Marble is metamorphosed from limestone.

Metamorphic rocks, by virtue of intense chemical reactions through which they go, produce beautiful and colourful finishes to sculptures (Ashurst, 1990). Zimbabwe stone sculpture is executed using mainly granite, serpentine, marble, limestone, verdite, wonderstone, soapstone, pyrophyllite, opal and dolomite.

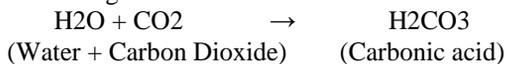
⁶ The inhabitants of the Great Zimbabwe believed in the bird sculpture symbolism that were used for communication between the living and the spirit world.

⁷ These are sculptors introduced to a more formalised art production in the 1950s and 1960s. Several institutions such as the National Gallery, Vukutu and Tengenenge promoted art practice. Some of the early sculptors include Thomas Mukarobgwa and Joram Mariga.

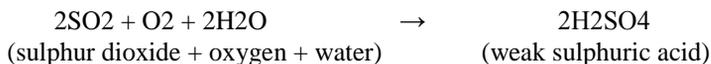
The most popular rock is serpentine whose varieties include springstone, leopard rock, cobalt stone, lepidolite, golden serpentine, fruitstone and Masvingo serpentine.

There are several environmental threats to sculpture rocks which include physical, chemical, organic weathering; bio-deterioration; acid rain; relative humidity (RH); atmospheric pollutants and human induced factors. Weathering is unique to the structure and mineral content of the rock, local climate, vegetation around the rock and the duration of weathering period (Waugh, 1998). Physical weathering involves frost action, insolation, salt weathering and pressure release (Waugh, 1998; Small, 1993; Foulks, 1997).

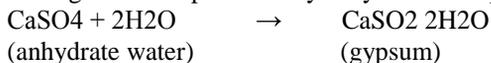
Chemical weathering comprises a range of processes, which alter the mineral composition of rocks. The chemical reactions are mostly concentrated on the rock surface or along fissures. As a selective process it attacks some minerals leaving out others and is more active in rocks, which allow penetration of water and air leading to block and granular disintegration (Buckle, 1978; Bunnet, 1984). Carbonation as part of chemical weathering involves the change of calcium carbonate to calcium bicarbonate by rain water containing carbon dioxide. The chemical formula for carbonation is as follows:



Acid rain is another form of chemical weathering whose effect on sculptural artifacts is tremendous. It is formed from industrial carbon dioxide, sulphur dioxide, and nitrogen oxide released into the atmosphere (Waugh, 1998). It is very common in urban environments where car exhaust fumes abound. The reaction formula for acid rain is as follows:



Hydration is a physio-chemical process that affects rock minerals with the capacity to take in water. This increases mineral volume, setting up physical stress within the rock as in the conversion of iron oxides to iron hydroxides. The absorption of water by mineral salts causes swelling resulting in rock fracture and flaking. An example is the hydrolysis of feldspar in granite. The chemical formula for hydrolysis is:



Organic weathering is a result of humic acid from decomposing vegetation containing elements such as calcium, magnesium and iron, which lead to deterioration of sculpture stone. High relative humidity encourages biological activity such as molding, lichens and algae growth (Thomas, 1998). It also causes changes in physical dimensions of rock minerals and accelerates chemical reactions. Molds begin to grow at RH 65-70% and also in warm stagnant air.

Light is one of the single largest threats to stone sculpture that affects precious stones such as nepheline, topaz, sodalite, fluorite, barites, apatite, anhydrites, serpentines, verdite and marble. Many stone sculptures lying in gallery gardens, museums, exhibitions and other exposed collections have lost their luster through exposure to uncontrolled lighting. Sources of this destructive lighting range from solar energy to artificial lights. Ultraviolet rays cause photochemical reactions and changes in minerals.

Dirt and dust accumulate on shelved and horizontal parts of sculptures. These may penetrate porous rocks to cause staining. High traffic areas have greater accumulation of dirt. Rock sculptures exposed to open air are also vulnerable to wind erosion over long periods of time. Dust particles carried by wind act as abrasives against standing stone sculptures and wear them down. Most threats leading to sculpture deterioration, even the natural ones, reveal directly or indirectly human induced factors. These include fire, vandalism, sculpture maintenance processes, transport and repair. Besides cracking and flaking, fire deposits soot on the rocks leading to discolouring and eventual chemical erosion in humid conditions (Thompson, 1984). In addition to vandalism, adhesive repairs are also a cause for discolouring on jointed

or repaired areas over time. Some consolidants such as cement and plaster are in fact a hazard to the rock minerals. Old wax coatings may discolour over time if the sculptures are neglected. The movement and maintenance of stone sculptures is often a source of damage and deterioration. Improper handling methods and use of some tools and chemicals during cleaning are also detrimental to the rock's integrity.

Research Questions

The study was guided by the following questions:

- What is the physical condition of stone sculptures at the selected sites?
- What are the qualities and properties of different stones used by sculptors?
- What conservation and preservation strategies do local stone sculptors and galleries use on identified stones for sculpture? and
- What conservation and preservation practices can be adopted to avoid decay and threats to local stone sculpture?

2. Research Design and Methodology

This case study was predominantly qualitative (Bogdan, & Biklen, 2007; Creswell, 2007; Denzin & Lincoln, 2011; Patton, 2002; Rossman & Rallis, 2003; Silverman, 2011) since conservation issues in general are attitude based. Data were sought from sculptors, artists and conservation officers, and analysis of artworks and documentary records. To solicit information on the nature of stone sculpture at the National Gallery of Zimbabwe and Chapungu Sculpture Park, conversational interviews were conducted (Huberman & Miles, 2002; McMillan & Schumacher, 2001; Patton, 1990). The aim was to gain in-depth knowledge about conservation issues at the two sites. At Chapungu Sculpture Park interviews were also held with artists focusing on issues such as artists' knowledge of sculpture stones in Zimbabwe, threats to sculptures and what conservation measures were being used at the gallery.

Conditions assessments (Patton, 2002; Silverman, 2011) were made on the state of sculptures, the extent of deterioration of sculptures and maintenance methods at the two sites. Observations were made of storage facilities for sculptures, their exhibitions space and environments. Curation of stone sculpture in relation to physical and chemical properties was also observed as well as how damaged artworks were restored or reconstructed.

Document analysis (Huberman & Miles, 2002; Silverman, 2011; McMillan & Schumacher, 2001; Rossman & Rallis, 2003) provided data on early state of sculptures. Documents that were studied included official records, some newspaper accounts, reports, letters as well as published and unpublished documents. Official documents generally would contain information about the type of artifact, the material from which it was sculpted, the year it was made, the artist and the outstanding characteristics. Where proper conservation was done, there would be reports on periodic condition assessments. These would make it easy to note the amount of deterioration, if any, between the time the sculpture was made and the present. Analysis of photographs would complement these records. The methodologies employed in the study were, therefore, guided by the general principles on international stone sculpture conservation and preservation practices (Wheeler, 1990, 1992; Kavenagh & Wheeler, 2003).

3. Results

Fifty percent (50%) of all the participants identified Zimbabwe stone sculpture as a national cultural heritage worthy of conservation. Seventy five percent (75%) of the sample knew at least two local sculptors while 37% knew at least three types of stone used by Zimbabwean sculptors. Eighty eight percent (88%) identified general cleaning and wax polishing as conservation methods of stone sculpture. All participants agreed that stone because of the resistant nature of the materials had no real threats, therefore would hardly deteriorate through any other means except through breakage. They claimed no

knowledge of methods of preserving and conserving sculptures but that occasional waxing and polishing of the sculptures were good enough conservation measures.

Conservation officers at the two galleries exhibited sufficient knowledge of stones that are used for sculpture in Zimbabwe. These rocks include serpentine, verdite, cobalt, soapstone, wonderstone, marble, limestone, granite and dolomite. However, the conservation officers did not fully understand the chemical composition and properties of sculpture rocks. Officers at Chapungu Sculpture Park opted to removing those sculptures that seemed to deteriorate when placed outside, and storing them in storage cases as a way of conserving them. At the National Art Gallery the sculptures were left outside unprotected as they were deemed generally resistant to any threat of deterioration or decay. The exception was sunlight which all the conservation officers viewed as being a cause for colour change in lustrous stones. Routine maintenance of sculptures at both sites included irregular dust removal and sporadic polishing of those in strategic areas of display especially in doors.

Ordinary construction cement was used to restore broken stone sculpture, using metal pins and dowels where strong joints were required. Sometimes contact adhesives such as glue would also be used in delicate areas. No particular attention was paid to the difference between restoration and reconstruction of stone artworks in the applied methods of conservation at both Chapungu and the National Gallery. During transportation of large stone sculptures, both institutions used ropes and fork-lifters to minimize breakages, cracking and markings on the sculptures.

The conservation officers at the Chapungu Sculpture Park kept remarkable inventories in which collections were recorded electronically and photographically. The officers cited fear of losing the precious heritage through theft and piracy as the major reason for strict documentation. Both Chapungu Sculpture Park and the National Gallery conservation officers admitted that they did not have regular condition surveys and assessments of artworks. These were seldom done to verify quantities and safety of stone sculptures.

Curatorial activities at both institutions centred on: Identifying potential sculptors; helping artists to maximize the sculpting potential; helping artists exhibit their artworks in the galleries, other display spaces and occasions and helping artists to market their works locally and abroad. No sufficient effort was made by the curators to make the artists aware of the nature of stone and its vulnerability to deterioration threats and the need to conserve sculptures. All curators could not explain why artists chose the specific stones that they used neither were they conversant with the chemical properties of such rocks. Two artists from Chapungu Sculpture Park showed thorough knowledge of types of stone used for sculpture. They also showed knowledge about properties and attributes such as luster, hardness, colour and workability. These determined the choice of stone by an artist. Breakage and colour loss were given as the most significant threats to stone. The conservation and preservation measures given by the artists include keeping and transporting delicate stone sculptures in wooden crates or boxes to avoid breakages and polishing of a finished artwork to enhance its lustrous sheen. To conserve sculptures meant for overseas markets and exhibitions, the boxes would only be labeled "FRAGILE". While the artists exhibited substantial knowledge about sculpture rock types, they expressed very little knowledge about how to conserve stone sculptures.

Gallery records

Documents at both the National Gallery and at Chapungu Sculpture Park were analysed to find out how the institutions dealt with stone sculpture conservation. A brief conservation manual at the National Gallery adapted from the conservation manual of the National Museums and Monuments of Zimbabwe simply mentioned stone sculpture as another form of Gallery collection that required conservation using modern scientific methods. No particular conservation methods, procedures and programmes were outlined for stone sculpture as was the case for ethnographic and organic materials whose conservation

was clearly spelt out as including protection from pests and use of controlled humidity. The National Gallery had a record which had the title of the artwork, the artist, date of execution and the stone type.

Comparisons between early photographs and the present state of many sculptures showed various forms and levels of deterioration. Deterioration was more advanced in sculptures exhibited outside buildings. Published newspapers and journals such as the Herald and the Heritage respectively, which have published articles on Zimbabwe stone sculptures since the early 1980s had sufficient accounts on the development, uniqueness, character and importance of Zimbabwe stone sculpture. No account dealt with conservation of specific sculpture stones. At Chapungu Sculpture Park, all sculptures were textually, electronically and photographically documented. The documentation, though thorough in many respects, mentioned only storage in wooded cases or boxes and polishing as means towards conservation of sculpture.

Condition Assessment

Sculptures whose condition was assessed at the National Gallery were made out of various types of stone such as granite, verdite, lepidolite and marble. Eight five percent (85%) of springstone sculptures had suffered severe loss of colour and sheen. Most had a pale and dirty grey.

The sculptures had moderate to extensive accumulation of dust especially those artworks displayed outside. Examples of sculptures thus affected included the *Wounded Kudu* and *Where is my head* by John Takawira. The sculptures also had graffiti indicating human vandalism. The National Gallery inside collection such as *War Victims* by Joseph Muzondo were intact. Lepidolite, springstone and verdite sculptures appeared more stable as inside collections while opal artworks exhibited moderate cracking and loss of colour. Examples of such opal moderately deteriorated sculptures were *Thinking about tomorrow* and *Handiende* (I am not going anywhere) by Lazarus Takawira.

Salt weathering, which results from saline evaporating water on the rocks, is an evident threat of physio-chemical weathering on many serpentine sculptures within the river banks at Chapungu Sculpture Park. It is responsible for much colour loss and fading of once shiny artworks. Oxidation was highly manifest on most iron bearing rocks in the Park because of continuous humid conditions in the area. Most serpentines and granites had rusty patches especially in areas that were not polished. These chemical decaying activities had weakened all affected sculptures by slowly removing important mineral constituents leading to crevice and crack formation. Paradoxically, sculptures in Chapungu Sculpture Park had not been exhibited considering such environmental influences. Outstanding sculptures thus affected include the *Baboon Face* (springstone) and *Sisal* (fruitstone) by Benhura Dominic, *Kudu* (fruitstone) and *Natural Face* (granite) by Joram Mariga, and *Bathing Mother* (springstone) by Mavhudzi Raphael *Natural Face* (granite).

Some serpentine sculptures in the park had turned a dull grey because of continuous exposure to sunlight and rainfall. Besides causing exfoliation, flaking and cracking to sculptures through insolation, sunlight had caused loss of luster and sheen to many previously shiny sculptures. *Multiple faces* (granite) by Tendai Mutasa, *Mother bathing child* (springstone) by Taylor Nkomo, *Woman carrying a pot* by Daniel Mariga are a few of the many examples of sculptures that had been affected by sunlight.

Another common threat to sculptures at Chapungu Sculpture Park was bird waste and droppings. Quite many sculptures had been tainted and spoilt by the droppings. The sculptures had become unsightly. Many sculptures to the southern part of Chapungu Sculpture Park were also observed to have been covered by soot or smoke from burnt grass that grew round the sculptures.

Serpentine, granite, verdite and lepidolite had become greyish with minute flackings especially in unpolished parts of the sculptures. Some wax had turned to black stains on the sculpture surfaces through photochemical reactions. Acidic rain water also has had a telling effect on several sculptures. Crevices and cracks had been formed and the rocks showed signs of disintegration at the two study sites.

4. Discussion

In spite of the gallery staff and artists' remarkable ability to list and describe the physical characteristics of rocks used for stone sculpture, some expressed limited knowledge of stone sculpture conservation methods. All the concerned personnel working at the Gallery and the Sculpture Park were not adequately trained in stone sculpture conservation per se. They had been trained to conserve other gallery and museum collections such as wood, paper, fabrics and other organic and inorganic materials. There were no conservation guides and literature pertaining to stone sculpture to which conservation officers and curators would make reference to in their efforts to preserve and conserve the artworks.

The curators were not trained to look after stone collections as regards their chemical and physical attributes except avoidance of breakages, polishing and general cleaning. Such limitations inevitably put stone sculptures at serious risk of decay. What would further worsen the situation was the fact that these institutions are highly regarded as depositories of professional knowledge, ethics and methods towards lengthening the lifespan of various forms of cultural heritage for the benefit of posterity. Much, therefore, needs to be done in the realm of training personnel who would be responsible for stone sculpture conservation. According to Wheeler (1990, 1992), Kavenagh and Wheeler (1992) and the 1992 UNESCO Charter for the conservation of cultural heritage, conservation entails defining and knowing the heritage to be conserved. This is important because conservation personnel need to prepare relevant programmes of preservation based on proper knowledge of the heritage. Such programmes were non-existent at the sites.

Documentation of stone sculpture at the National Gallery and Chapungu Sculpture Park was properly done as far as listing the names of artworks, the materials from which they were made, the names of the artists and dates of manufacture were concerned. Nonetheless, no substantial material in the records considered conservation of specific sculptural stones. Though the records included photographs of most sculptures in the collections, the photographs were used only for the verification of quantities of the artworks. According to the 1996 UNESCO document on principles for the recording of cultural heritage, recording is integral to conservation, which involves the capture of information, condition and nature of heritage at points in time and is used for such processes as condition assessments. The latter becomes the basis for repair, restoration or reconstruction of damaged stone sculptures.

Other documents on stone sculpture at the two sites mostly had details about themes of the artworks, types of stones used, the artists, dates, history and development of the art. These documents included journals such as *The Heritage* (1996). Others included newspaper articles on the nature of sculpture, its history and development. While a few books on Shona stone sculpture had been authored by Celia Winter-Irving, Sibanda Doreen, Guthrie and Marion no author had sufficiently delved into scientific methods of conservation of the heritage. The apparent silence on specific conservation procedures makes it appear that stone sculpture does not necessarily require deliberate, thorough and specific conservation methods.

5. Conclusion

Conservation is a critical notion in the preservation of artifacts in galleries. It is a necessary aspect that should be an integral component of any progressive curatorial programme. Artists, art gallery staff and personnel in art related fields need to be aware of the types of stone, their compositional constituents, and how best threats to such stones can be mitigated. It was evident from this study that artists and galleries staff did not have a common ground in terms of approach to stone conservation. The majority had knowledge about stone types but were minimally informed about the methods and procedures of how to conserve such sculptures. Stone sculpture has remained the predominant artform that makes people access the historical past of mankind, hence needs to be properly preserved for future generations. It is

recommended that more rigorous attempts be made to conscientise artists and gallery staff on the correct procedures of conserving stone sculpture amid the different environmental conditions affecting it.

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