

CONSERVATION OF STONE OBJECTS**M. Thenaruvi**

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Cite This Article: M. Thenaruvi, "Conservation of Stone Objects", International Journal of Interdisciplinary Research in Arts and Humanities, Special Issue, December, Page Number 27-28, 2017.

Introduction:

A large number of art objects found in museums, temples churches, private collections were fashioned out of stone. Stone must have been one of the first materials to be used for making artefacts, tools, implements and objects of daily use. In India, where religion with idol-worship was part of life, it is natural that there be an abundance of stone images and statues, sometimes very big like the famous statue of Bahubali at Shravanabelagola in Karnataka, and more often small images found in the temples and in many a private collection all over the country. Because stone was a popular medium for the construction of temple and palaces and other buildings, which were quite often intricately carved stone architectural pieces are also available in plenty. In India most museums are archaeological and as a result, in most museums, tools, sculptures, artefacts and implements made of stone are found. So also is the case in the majority of the museums of South and Southeast Asia. Stone sculptures carving, architectural pieces are also to be found in many a private collection and in temple, etc.

Nature of Stone:

Geologically speaking stones are of three types: igneous or volcanic, metamorphic, and sedimentary. Ligneous rocks, like granite, are those which were formed by cooling of volcanic lava. Sedimentary rocks like sandstone and limestone were formed by gradual sedimentation of layers of sand and other inert materials brought by rivers and streams and deposited at the beds of lakes and ponds. In due course of time these layers got petrified and stone formed. Metamorphic rocks, for example marble, were formed by the metamorphosis of either igneous or sedimentary rock into a new form on account of pressure or heat or some other geological change. Out of these the igneous rocks are the most durable and hardy; sedimentary rocks have a tendency to split into layers or if the bond between the sand particles is weak, to disintegrate into small pieces; metamorphic rocks are of medium durability. There some other types rocks like laterite which are very porous and easily affected by moisture and percolation of water.

Stone Objects:

Stone objects like sculptures and tools sometime disintegrate and at times carious layers fall apart. Only prolonged treatment in the laboratory restores them back to a sound condition. There are stone object of which large parts are covered with micro-organisms hiding the details of the carving underneath. In this case also only prolonged treatment in the laboratory can the object and remove the micro-organisms. These example show that stone objects, although normally strong and durable, are also subject to various forms of deterioration and need as much care as other types of objects. One of the main causes of damage to stone objects is the presence of soluble salts in them. Salts, by absorbing moisture, may form solutions which remain inside the cavities between the particles forming the rock. On evaporation, salt solutions turn into salt crystals, which often appear on the surface of stone in the form of white efflorescence. Continuous dissolution and crystallisation of the salts result in the repetition of strain on the stone, the surface of which ultimately turns into powder. As a precaution, therefore, all stone objects, immediately after excavation, should be washed in repeatedly changed salt-free water to leach out the salt. The best method known for the curing of salt-laden stone objects is to treat them with the paper pulp method. In this method, paper pulp is soaked overnight in water and while wet, it is applied all over the object and allowed to dry. While the pulp is dry, it draws out salts present in the stone. When the pulp is completely dry, it is removed from the object. A test is conducted to ascertain whether the salts are removed or not. If still present, the process is repeated till the salts are completely removed. If the surface of the stone becomes weak or powdery, consolidation with a binder-type solution will be required after salts present in the stone have been extracted. Separation of layers is particularly noticed in sandstone objects and sculpture. Laboratory experts, if consulted, introduce resin or some other solution to consolidate the layers. One of the main causes of moisture formation in stone buildings and objects which are directly in touch with the ground is the rise of water from the ground to the body of the object through the capillary pores present in the stone. Hence stone objects should never be displayed by embedding parts of them in the ground or in brick or cement pedestals. Stone sculptures can be placed on brick or cement pedestals only when a moisture barrier, like a plastic sheet, is inserted in the pedestal, just above the ground.

Stone Idols:

Stone sculptures often accumulate dust, dirt and stains. Loose dust can easily be brushed off. Plain water can wash away most types of dirt accretions. Sometimes a mild detergent in a water solution can be used. Acids, howsoever dilute, should never be used to clean stone, except by a trained conservator who understands their action on various types of stone. Stains of grease or coatings of oil, paint or wax can be cleaned with organic solvents of appropriate type, like toluene, acetone, trichloroethylene, triethanolamine, etc. A deposit of moss or algae may be seen on stone objects, especially on those which have remained in the open for some time. Such a deposit is not only ugly, imparting a patchy, green or black appearance to the object; it may also produce pits in the surface of the stone, thereby weakening its structure. A trained conservator should be able to remove the moss deposit easily. One should not try to do this job oneself as it involves the use of chemicals which are dangerous.

Handling of stone sculptures, pillars and other objects, and their shifting from one place to another, is probably more difficult than that of other types of material because of the weight. The best way to lift heavy objects is by mechanical fork-lifts,

International Journal of Interdisciplinary Research in Arts and Humanities**Impact Factor 5.225, Special Issue, December - 2017****National Conference on Disseminating Knowledge on Preservation and Conservation of Ancient Monuments and Antiquities of India****On 19th & 20th December 2017 Organized By****PG & Research Department of Botany & Biotechnology & History, Bons Secours College for Women, Thanjavur, Tamilnadu**

and to move them by trolleys a fork-lift, however, is expensive. As an alternative, strong rope may be tied around the objects and four or six persons may lift it to the trolley and even carry it suspended from a pole. In that case it is absolutely necessary to have generous padding between the rope and the objects; otherwise it may be damaged by abrasion. Always use a thick padding of a material like clean old quilts or at least, rolls of clean gunny sacks, between the rope and the stone object. Stone objects can break or be damaged during transit. Great care must therefore be exercised in packing them. First of all the crate in which the objects are to be packed must be strong. There must be sufficient resilient material all around the object when placed in the crate to avoid jerks and shocks. Sometimes double crated are used for packing large stone objects by placing a smaller crate of the size of the object inside another crate. The object, with cushion materials all around, is packed in the inner crate, and enough resilient material is packed between the inner crate and the outer crate. In this way, shocks and jerks on the outer crate, which are bound to take place during transportation, are absorbed by the cushion and not transmitted to the object. While packing the object, particular care must be taken to safeguard the arms, legs or other protrusions in the objects.

Conclusion:

At the time of distempering of painting of walls, stone objects may get paint splashed on them. Care should be taken to cover them with sheets of polythene, or at least cloth, and in case paint-drops do fall on an object, it should immediately be cleaned with water or with appropriate solvents like xylene, acetone methylated spirit, paint-remover. Removal is more difficult once the paint has dried. Stone objects often suffer damage during storage, especially when big and small objects are dumped together. Some objects may get abraded or break. The best method would be to store the objects on separate shelves or platforms amply padded and strong enough to support the weight of sculptures.

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