THE MAINTENANCE MANAGEMENT OF CULTURAL HERITAGE: Case study of Tambiá Fountain

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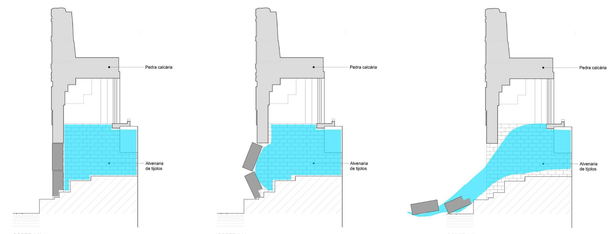
INTRODUCTION

The Tambiá Fountain, located in João Pessoa, Brazil, is a monument listed on the national protection register. Built in 1736, it is one of the thirteen water supplies to the city since its beginnings of colonization by the Portuguese. Iberian cities were traditionally established next to rivers and in high sites for defense purposes. João Pessoa city was founded on the top of a hill, building its houses and main civil and religious buildings on the left bank of the Rio Paraiba. Until the implementation and consolidation of the city water supply system, which took around two decades (Nogueira, 2005), fountains and spouts were the main elements supplying drinking water to the population. During occupation, water springs, such as the Tambiá fountain, had important historical value to the city.

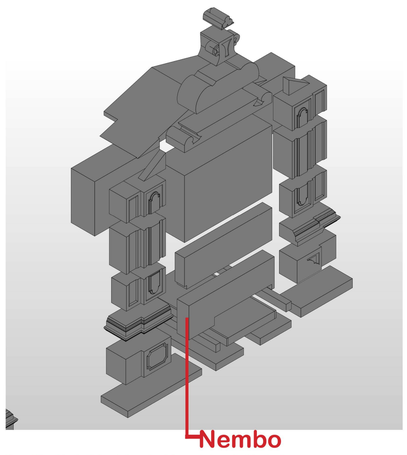


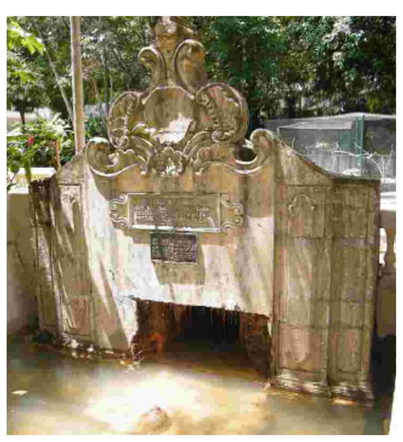
Schematic drawing showing how the stones collapsed

At the beginning of the 20th century, the city of João Pessoa underwent several urban transformations. In 1922, the construction of the Arruda Câmara Park, in the vicinity of Tambiá Fountain, was authorized by the governor. To implement the urban elements present in the park, a series of landfills were made, placing the Fountain literally inside a hole, concealing its monumentality. In 2011, part of the nembo stone that makes up the frontispiece, where the taps were positioned, collapsed.

Three materials compose the fountain: limestone forms the masonry on the front and the upper internal part of the reservoir that is behind the fountain; solid ceramic bricks, structuring the internal reservoir; granitic stones on the thresholds/steps of the waterfall. The taps, according to research sources, were added later.

According to what was found out from Mr. Manoel (plumber in the park), days before the collapse, the park's director had authorized closing the taps of the fountain to be able to accumulate water in the reservoir and install a system made from PVC piping to supply the park's administrative and exhibition units. This caused excess pressure in the fragile reservoir inside the historic fountain. This explains the positioning of the nembo stones after it collapsed, facing upwards. The water pressure at the level of the joints of the lower and upper nembos swept the stone away as if by a river.





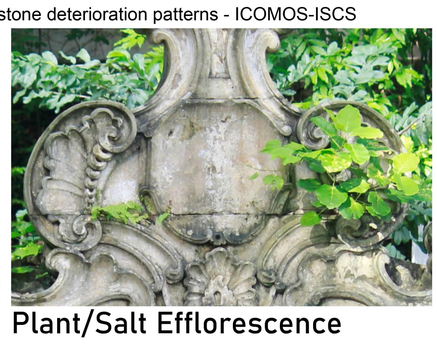
DOCUMENTATION

Damage Identification Cards (DICs) have been created for each component of the construction, defining causes, origin, nature, and agents of deterioration, further investigations into the causes deterioration. The documents refer to the basic procedures for investigating damage to historic buildings. DICs consist of a database, with graphical and photographic records and annotations about the damage existing at the Fountain. The collection of DICs for this structure was gathered and summarized in the condition map.

Investigations were conducted by taking samples of the existing micro vegetation, as well as microorganisms to identify the colonies that live on the building surface. The stone type was verified as a sedimentary limestone, probably extracted locally. At three metres deep, soil surveys found this rock which is abundant in the state of Paraíba. The microbiology consists of colonization of lichenized fungi and lichenized algae. This, as well as moisture stains, can be considered normal to the hot and humid tropical environment where the fountain is sited and can be eliminated with periodic cleaning procedures for the masonry.

Nomenclature based on Illustrated glossary on stone deterioration patterns - ICOMOS-ISCS

Moist Area/Stainings



Plant/Salt Efflorescence

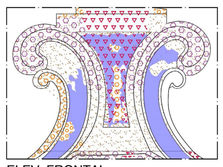
Loss of component

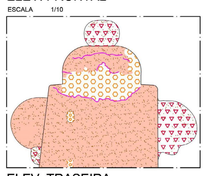
Biological Colonization (Lichen)

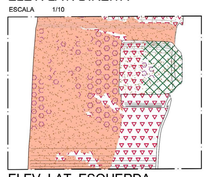
Biological Colonization (fungus)

Clogging

DICs AND CONDITION MAP CONTENT:







The cards have architectural drawings of the components and maps of deterioration. All the information is written on the right side. The reverse is completed with pictures, more drawings, or any additional information the work team judge necessary. Since it is a small monument we could make a DIC for each stone.

Manifestation - How the deterioration appears to the observer, e.g., white stains, black stains.

Causes - The cause of deterioration, e.g., excessive humidity, lack of maintenance

Nature - Is related to the material property, e.g., the stone is very porous, so it absorbs a lot of moisture

Agent - What is responsible for the decay, e.g., weathering, human activity

Procedures - What to do, e.g., restore the stone geometry, mechanical and chemical cleaning.

OBS: The procedures are more detailed in the conservation plan. This describes the process and the materials for restoration, e.g.,

>The mechanical and chemical cleaning must follow the protocol of testing in small nonvisible areas, observing the abrasive action on the materials with progressive tests and analysis of the removals;

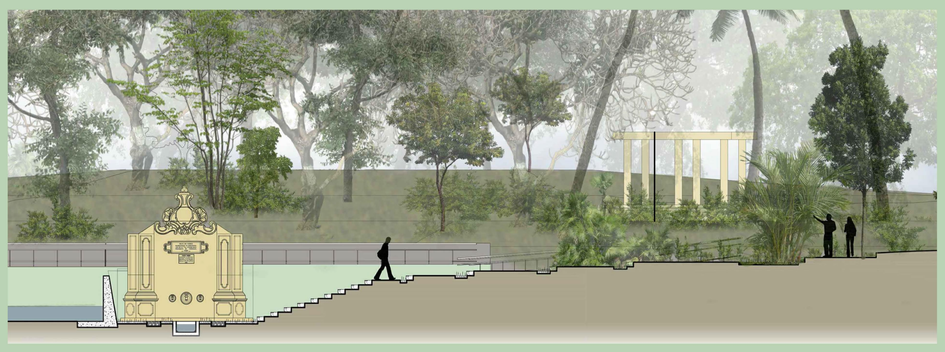
>A chemist with experience in artworks restoration should prepare the cleaning solutions;

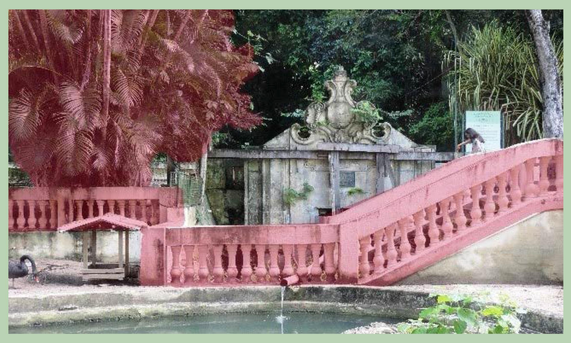
>The work of stone carving must be made manually by a professional in the stonework craft.

Pictures taken at CECI classes, showing the procedures for cleaning, lifting ,and carving the stone.

LANDSCAPE DESIGN STRATEGIES

In Brazil, it is common to see that many buildings restored require new projects because of the lack of maintenance or worse, technical solutions that do not consider the absence of resources to maintain them in the future. In extreme cases, such as the Tambiá Fountain, there is a lack of maintenance associated with inadequate interventions by those who are directly responsible for the monument and do not have knowledge relevant to its maintenance. Analyzing the image taken at the beginning of the twentieth century it is possible to see that the area has suffered from successive landfills. By defining the vanishing point in the image, we could determine how many metres below the current ground level the fountain was, using this argument to excavate and restore its monumentality. The proposal for landscape requalification aims to connect all the springs through open channels, using natural materials that are easy to maintain and which will not become clogged.





The landscape design aims to remove the additions to the surroundings, such as stairs and exotic plants, highlighting its artistic, historical, and cultural value.

Areas will be created so that the user can enjoy different views of the monument. Typical vegetation will be planted, restoring the Atlantic forest landscape, as shown in the old image of the site. The methodology used considers conservation as a cycle that begins with the design phase, and moves on to a conservation plan, the final step that brings together all the documentation to use it as an instrument for monitoring and preserving value for future generations.