

The Bust of D. Ferdinand II from Pena's National Palace The Application of the Laser Cleaning Methodology in Plaster Cast

This theoretical and practical work is based on the research for a master's thesis project in Conservation and Restoration of plaster sculpture. It is about the case of the Bust of D. Ferdinand II, from Pena's National Palace in Sintra. This Plaster Cast had some pathologies that impaired with this piece's preservation, namely small dark spots that seemed to be a biological infestation caused by excess humidity in pair with the shellac layer on the surface of the bust.

Thus, in view of this pathology visible to the naked eye, that had no results in its the removal when a simple chemical cleaning was applied before, a methodology of selective cleaning by ablation was carried out – The Laser Cleaning – in collaboration with the conservator-restorer Adélia Gomes, to remove these spots from the plaster cast, as an experimental procedure. Although this method is widely used in the scientific field of Conservation and Restoration, it does not have much prominence in plaster cast sculpture in Portugal.

The laser cleaning method is mostly used in the conservation of metal and stone, and has great results when applied to remove the first layer of dirt, without interfering with the substrate. This has been studied for years by many scientists in the field including John Asmus and Martin Cooper, and has been proven to be safer than regular cleaning methods, as long as it's carried out by professionals. As plaster casts conservators, we have many difficulties when intervening in an object, since this material can be fragile, so we believe the laser could solve some issues, without resorting to any type of more chemical abrasive solvents, that mostly should not be used in the cleaning process of plaster sculpture, due to the possible degradation of the material.

We know the existence of several plaster casts like this one in Portugal, but we have lack of documentation about the origins of this collection of plasters. Although we are sure that a molding process was done in this one from Pena's National Palace, due to the presence of the shellac so, we consider it as an important document for the dissociation of history information we had about the bust, in this sense, we only used the laser in the removal of the black spots only.

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