3D-ACQUISITION OF ATTIC RED-FIGURED VESSELS AND MULTI-SPECTRAL READINGS OF WHITE-GROUND LEKYTHOI OF THE *KUNSTHISTORISCHES MUSEUM* VIENNA FOR THE NEW CVA VOLUME

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Motivated by archaeological requirements we are developing a system based on 3D-acquisition based on structured light for archaeological documentation and a system for art-historic analysis of medieval paintings using multi-spectral readings of color pigments. Therefore the archaeological documentation including automated profile estimation has been tested on different excavations within different projects in Austria, Turkey, Israel and Peru. The methods for art-historic analysis have been tested on paintings from the *Belvedere* collection in Vienna, Austria (Project *Cassandra*).

We combined these two systems for documeting 107 red-figured vases and 20 white-grounded Lekythoi of the partially unpublished collection of antiquities of the *Kunshistorisches Museum* in Vienna. These vessels have been acquired with a 3D-scanner using a laser-plane (structured light) and a digital camera resulting in a 3D-model containing texture map (color information of the surface). As the texture map does only describe the colors seen by the human eye, we chose to add multi-spectral readings of 17 vessels which are enriched by post-burining applied painting to determine the reflection properties of the pigments in the full spectrum of light (Near-Infrared to Ultraviolet), which will lead to the classification of the ingredients used for the paintings. Finally the setup for the multi-spectral readings was acquired with the 3D-scanner and registered to the 3D-model of the vessels. This allows a precise (<0.1 mm) location of readings of points of interest (e.g. red paint for coats and hair, black, pink, blue and green for clothing and diverse objects) for proper documentation. The 3D-model enables us to compensate deviations of the spectral data introduced by the curvature of the surface.

The presented work was conducted within a publication-project of a new volume of *Corpus Vasorum Antiquorum* (CVA). Therefore we show results for traditional publication based on 3D-models by automatically estimated profile lines, horizontal and arbitrary cross-sections for handles and views from the top of the vessels e.g. having a trefoiled-mouth. Additionally we show the unwrapped paintings with the registered multi-spectral readings, which will give evidence for further analysis about the authenticity and origin of the vessels. Furthermore we show that the proposed - combined - system is conservative, because it is contact-free, radiation-free and can be applied in an efficient way by acquisition of up to eight vessels a day within the museums storage, which means without moving the objects to another place. All work has been done with respect to the *London-Charter* to ensure the intellectual integrity, reliability, transparency, documentation, standards, sustainability and accessibility of the information gathered by 3D-acquisition.