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Computed tomography meets highlights of the state archeological inventory –virtual excavation and reconstruction

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The Archäologische Denkmalpflege Baden-Württemberg has used computed X-ray tomography (XCT) routinely since 2009.

This non-destructive method is particularly advantageous in the case of excavated blocks containing finds of different materials. Some astonishing results have been achieved with it over the past years, especially on composites of metal and organic materials. One of the exigencies of daily routine at the archeological heritage preservation authority is that objects have to be processed by a specified
deadline. Not only does the preparation of archeological finds for evaluation have to be carried out within an ever shorter time, the volume of finds is also increasing year by year. This made it necessary to look for alternative, yet also highly precise processing methods that could be used alongside conventional approaches. XCT has proved helpful here both in regard to its costs in time and the insights it offers.

Due to finds having lain the ground, especially in the case of burials, their materials are often found compressed in layers only a few centimetres thick. Separating individual layers of finds often leads to destruction of their context. XCT is well suited for documenting individual find layers because it permits
their virtual separation. To be able to visualise organic structures it is necessary to have a knowledge of the specific characteristics of the material in question, since they cannot be identified otherwise.

When objects are so poorly preserved from having lain in the ground that they can hardly be removed from the surrounding soil XCT often provides the only way to obtain a three-dimensional image of their appearance. In special cases neutron computed tomography (NCT) is used, which has been found to produce some very good results in the area of mineralised textiles.

The lecture deals with the possibilities of and limits to the innovative methods of X-ray and neutron computed tomography and shows different results.

Primary author: Mrs EBINGER-RIST, Nicole (Fachgebietsleitung Archäologische Restaurierung Regierungspräsidium Stuttgart Landesamt für Denkmalpflege Referat 84/ Archäologische Restaurierung)

Presenter: Mrs EBINGER-RIST, Nicole (Fachgebietsleitung Archäologische Restaurierung Regierungspräsidium Stuttgart Landesamt für Denkmalpflege Referat 84/ Archäologische Restaurierung)

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