

From big to small: 3D documentation in archeology and forensic anthropology

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BERN



Kirsten Buße¹, Lara Indra², Ursula Buck^{1,3}, Sandra Lösch²

¹ University of Bern, Institute of Forensic Medicine, Department of Forensic Medicine and Imaging, Bern, Switzerland

² University of Bern, Institute of Forensic Medicine, Department of Physical Anthropology, Bern, Switzerland

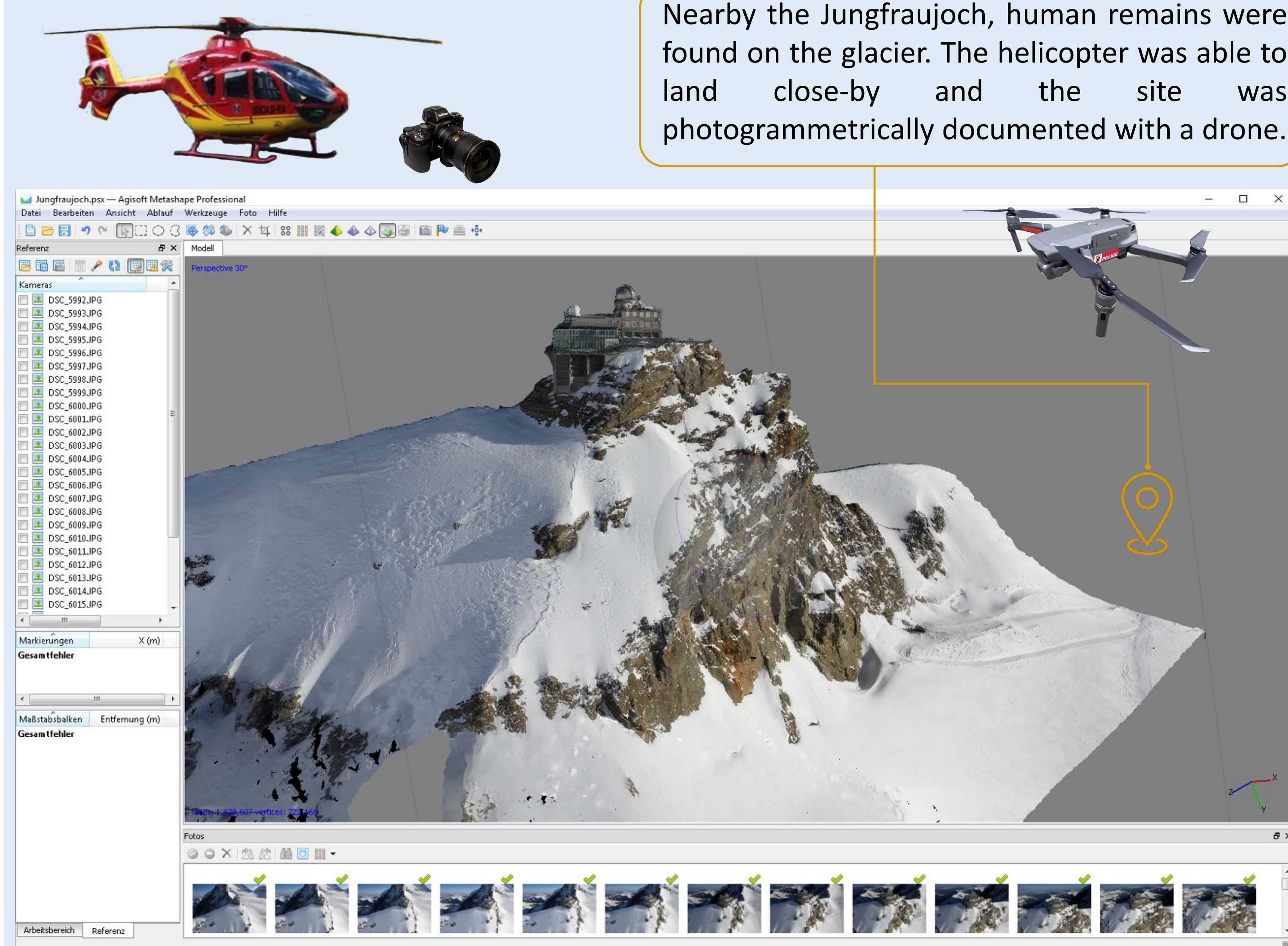
³ Canton Police Bern, Accident Service, Forensic 3D surveying, Bern, Switzerland

Introduction

3D documentation and reconstruction techniques are increasingly applied in archeology and forensic anthropological casework. A proper documentation approach offers a virtual preservation to the full extent of a site or specimen, e.g. a subsequently changing site or shape. Depending on the subject, according devices can be chosen. Herewith, a range of techniques for different scales, requirements and aims using cases from archeology and forensic anthropology in Switzerland is presented.

High-Alpine accident sites with missing people: Jungfrauoch-Region

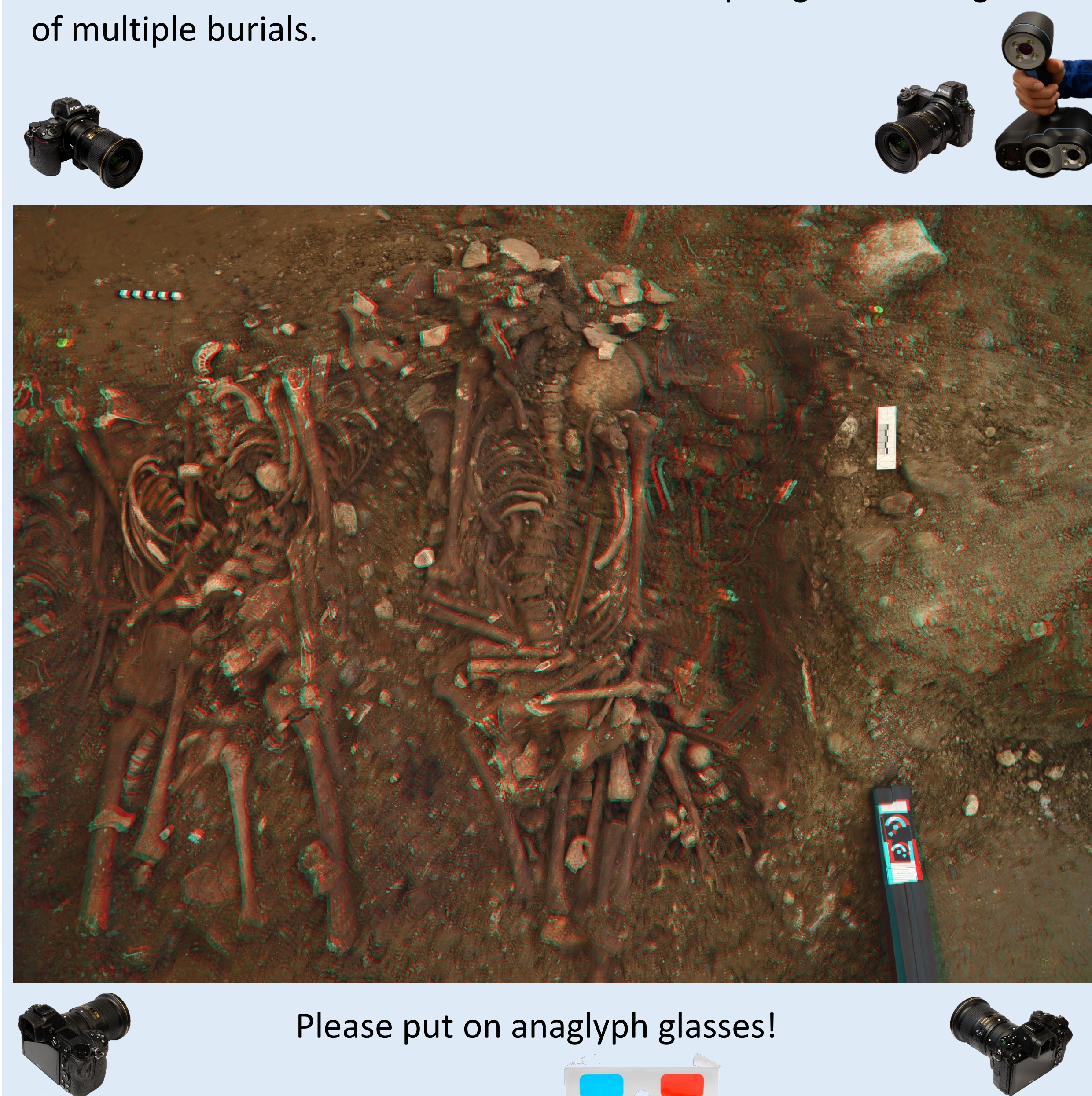
Nearby the Jungfrauoch, human remains were found on the glacier. The helicopter was able to land close-by and the site was photogrammetrically documented with a drone.



Helicopter-supported photogrammetry is useful in large-scale terrain that is difficult to access. The accident site of a speedrider in the crevasses near the Jungfrauoch was documented this way.

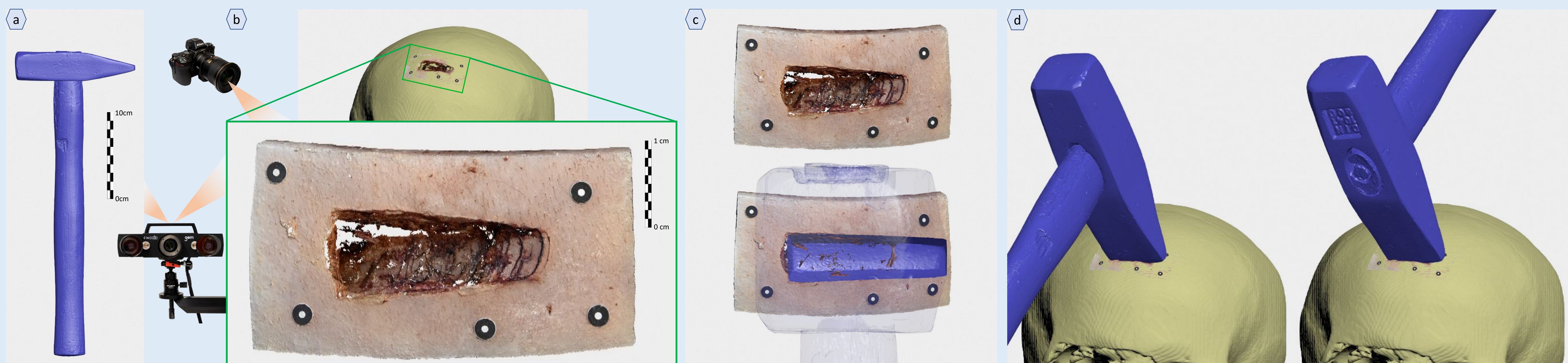
Documenting the structured chaos: multiple burials

During an excavation of a historic cemetery in Stans, we 3D-recorded the various excavation stages using photogrammetry and a hand-held scanner. It is crucial to document the original finding situation for later reconstruction and anthropological investigation of multiple burials.



Please put on anaglyph glasses!

Is this type of hammer the instrument of crime?



- a) The hammer was 3D documented in high resolution using a structured- light scanner. b) The lesion of the skull was scanned in high resolution using a structured-light scanner. The color information was supplemented using photogrammetry and subsequently fitted in the computer tomography generated 3D model of the victim. c) The hammer was repositioned with maximum penetration in the virtual 3D space. d) Because of the symmetry of the tool, the blow could have been struck from behind or from the front.

Conclusion

An accurate 3D documentation facilitates a following reconstruction or investigation, even if the location or specimen has altered in a later stage or is not available anymore. Therefore, it is crucial to know the different approaches in this rapidly developing field.

Contact:

Kirsten Buße
Phone +41 (0)31 684 0100
kirsten.busse@irm.unibe.ch
www.irm.unibe.ch



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