



3D in der Archäologie

Traditionell



Photos: S. Hageneuer

Traditionell



Photos: S. Hageneuer

Traditionell



Photos: S. Hageneuer



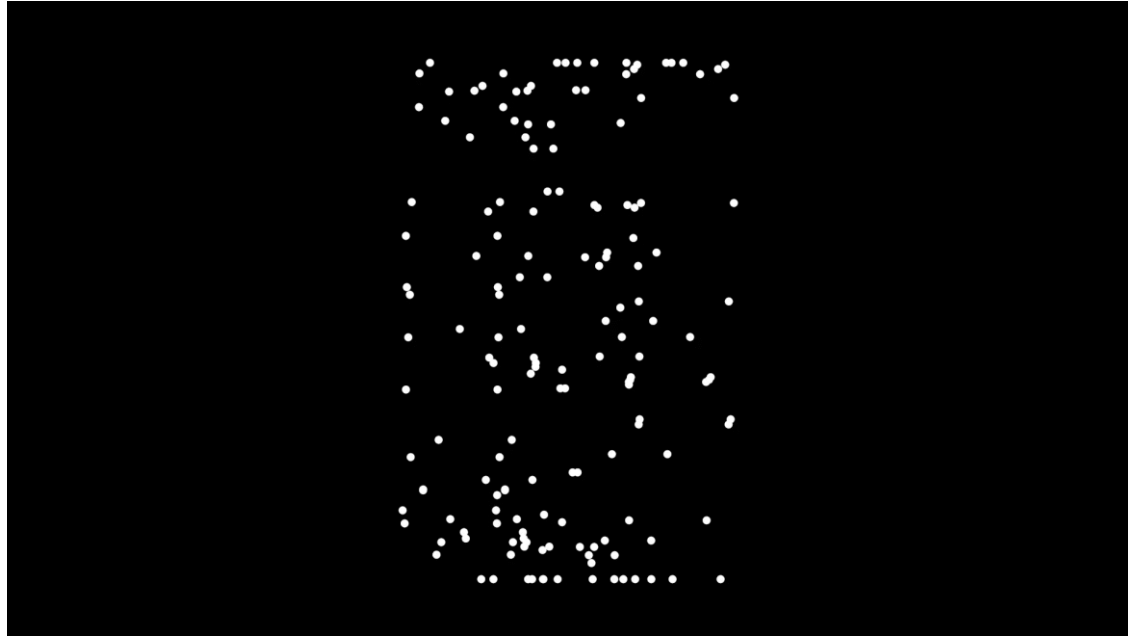
ARCHAEOINFORMATICS

Institute of Archaeology Cologne

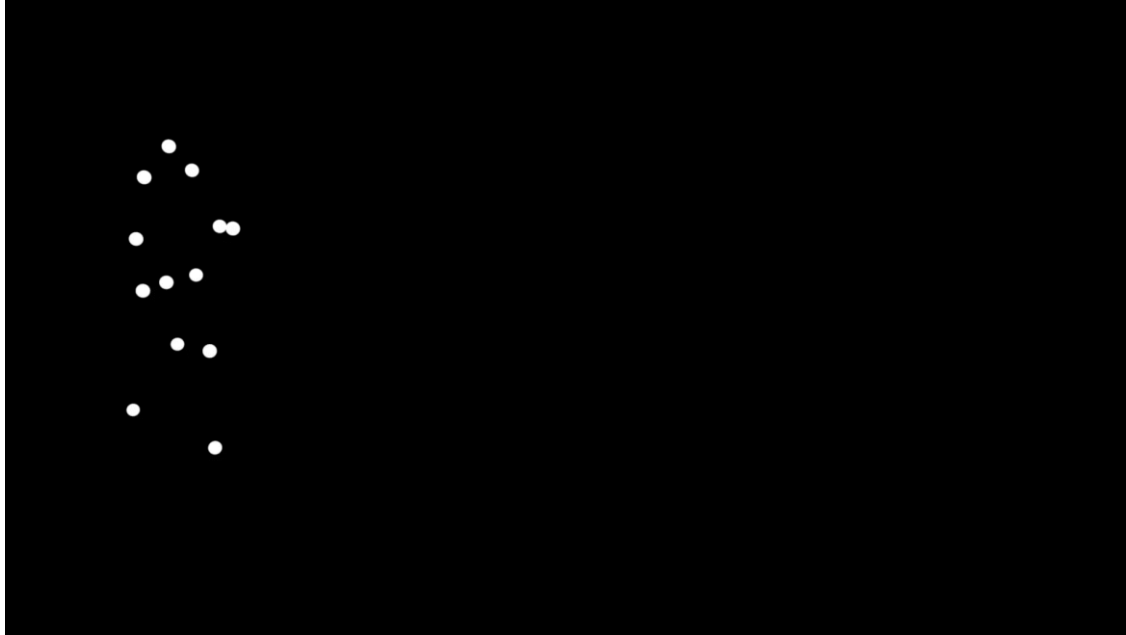
<http://archaeoinformatik.uni-koeln.de/>

Structure from Motion

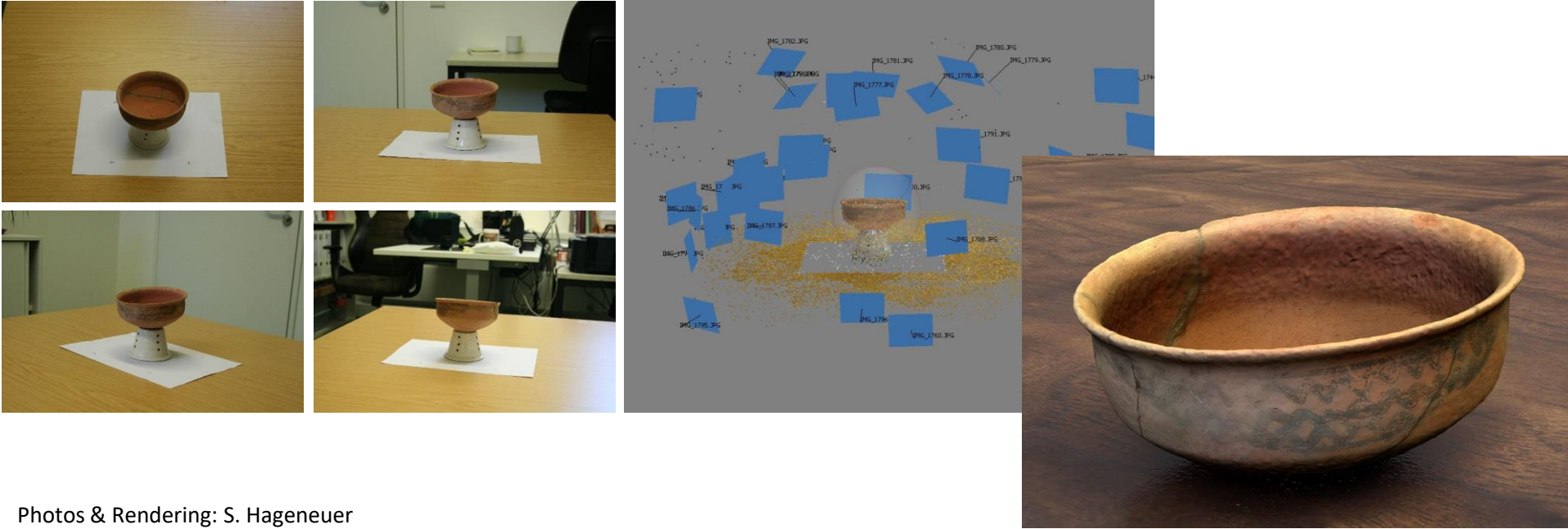
Structure from Motion (SfM)



Structure from Motion (SfM)



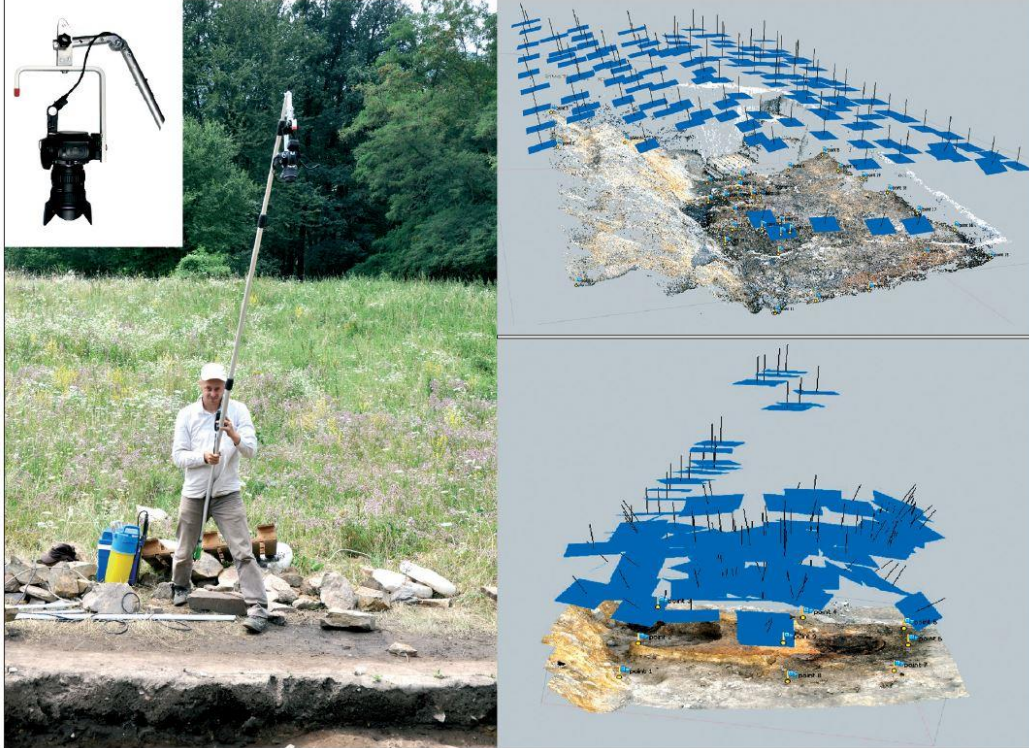
Structure from Motion (SfM)



Photos & Rendering: S. Hageneuer
Screenshot: Agisoft Photoscan

➡ *Creating 3D information based upon 2D images of different positions through point matching algorithms.*

Structure from Motion (SfM)



Quelle: R. Weßling, J. Maurer und A. Krenn-Lieb 2014.

Structure from Motion (SfM)

<http://grail.cs.washington.edu/rome/index.html>



Structure from Motion (SfM)

<https://sketchfab.com/archITCologne>

The screenshot shows the Sketchfab profile for archITCologne. The profile header includes the Sketchfab logo, navigation links (EXPLORE, BUY 3D MODELS, FOR BUSINESS), a search bar, and utility icons (shopping cart, notifications, upload, profile). The profile name is archITCologne, located in Cologne, Germany, with the tagline 'Bringing Archaeology and Computer Sciences together'. It has 9 followers and 6 followings. The main content area is titled 'POPULAR MODELS' and displays a grid of 3D models. The right-hand sidebar contains an 'ABOUT' section, a 'CATEGORY' (Organization / School), a 'WEBSITE' link, 'MEMBER SINCE' information, and 'STATS' (385 views, 6 likes, 5.6M triangles, 2.8M vertices). The 'SKILLS' section lists 3D Reconstruction, Cinema 4D, Photogrammetry, Photoshop, SketchUp, and Unity.

POPULAR MODELS

- Figurine of a servant (58 views, 0 likes, 3 triangles)
- Hellenistic terracotta figurine (69 views, 0 likes, 1 triangle)
- Ibis figurine (57 views, 0 likes, 1 triangle)
- Ushabti in form of a mummy for Djehutih... (56 views, 0 likes, 1 triangle)
- Harnack_x2 (0 views, 0 likes, 0 triangles)
- Harnack_x1 (0 views, 0 likes, 0 triangles)

ABOUT

We are the Archaeoinformatics department of the Institute for Archaeology at the University of Cologne, Germany. This account is for the presentation of our scanned and processed 3D models.

CATEGORY

Organization / School

WEBSITE

<http://archaeoinformatik.uni-koeln.de/>

MEMBER SINCE

May 2nd 2017

STATS

- 385 views
- 6 likes
- 5.6M triangles
- 2.8M vertices

SKILLS

- 3D Reconstruction
- Cinema 4D
- Photogrammetry
- Photoshop
- SketchUp
- Unity

Reflectance Transformation Imaging

Reflectance Transformation Imaging (RTI)



➔ *Creating a 2D image with additional vector information in order to interactively re-light the object from any direction.*

Photo: S. Hageneuer
Screenshot: RTIViewer

Reflectance Transformation Imaging (RTI)



Quelle: <http://secar.org/> | <http://culturalheritageimaging.org/> | S. Hageneuer

Reflectance Transformation Imaging (RTI)

Beispiel

3D laser scanning

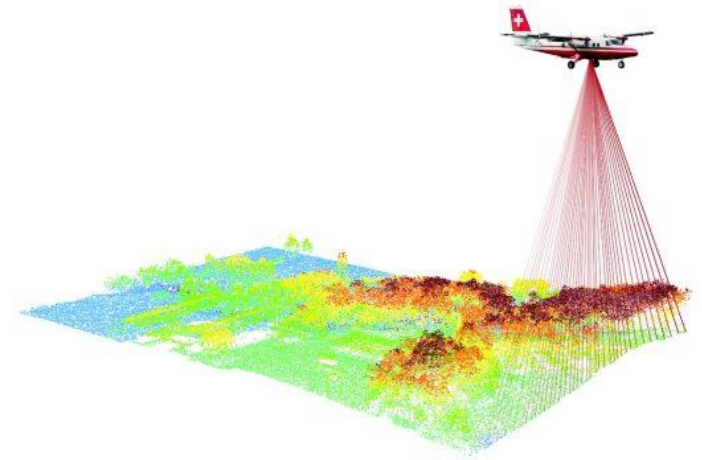
3D laser scanning



➔ *Light-based 3D scanning to create a dense point cloud and mesh it into a 3D object.
Airborne (LIDAR) or Terrestrial Laserscan.*

Photo: M. Remmy
Rendering: S. Hageueuer

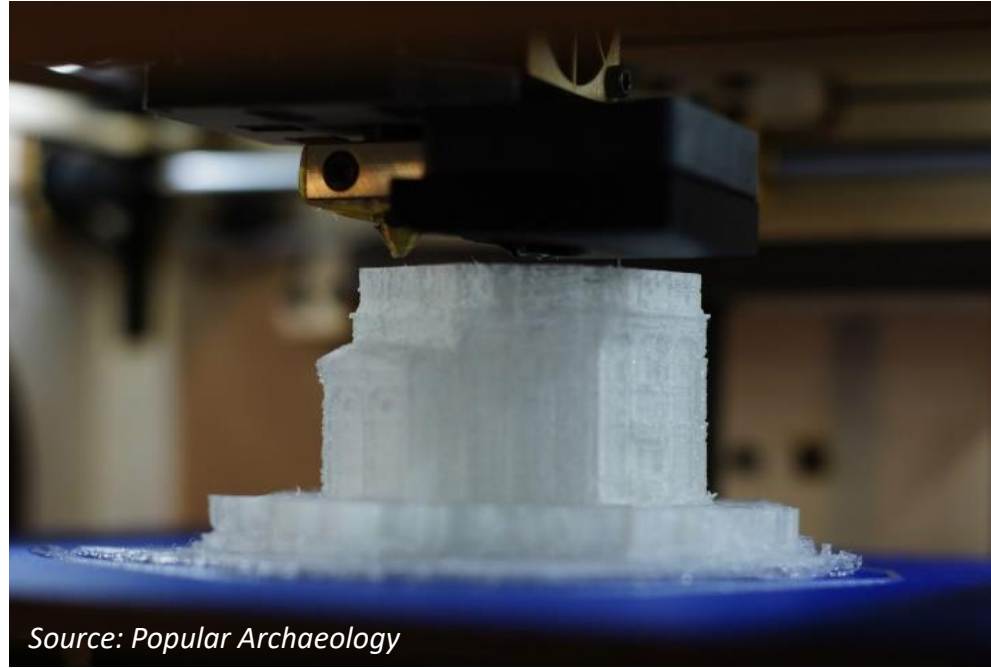
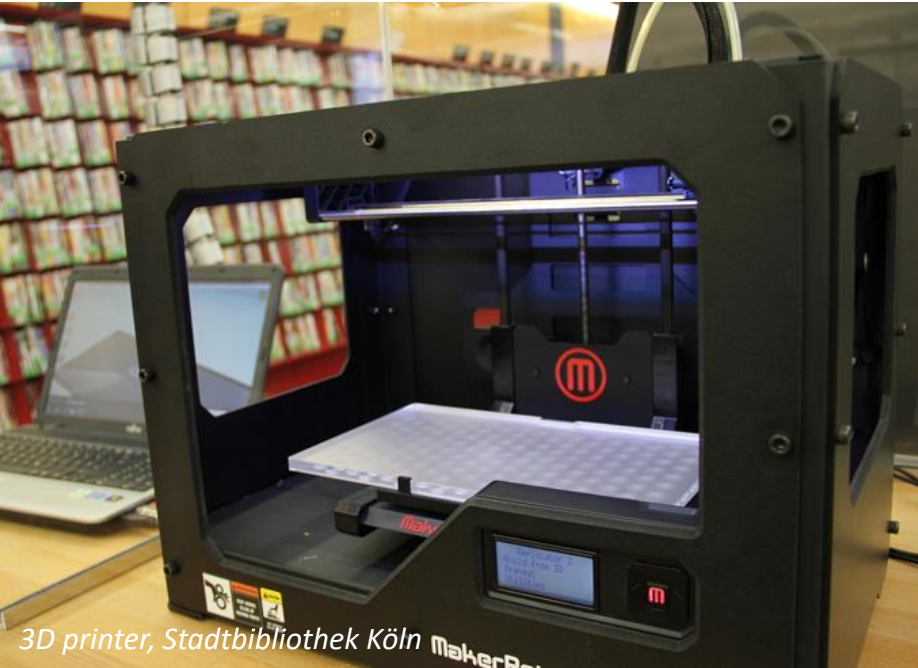
3D laser scanning



Photos: Pexels, Google

Additive manufacturing (3D printing)

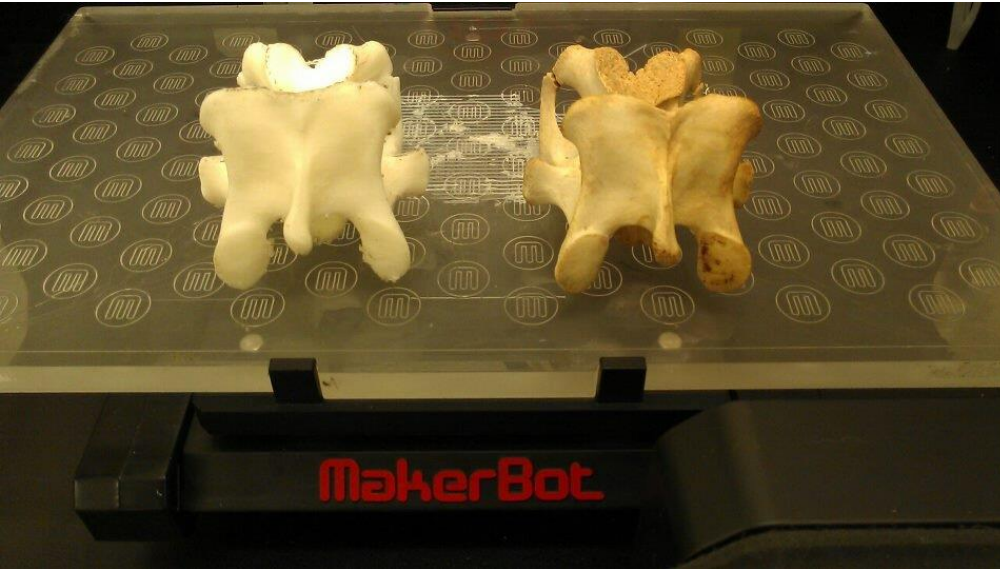
Additive manufacturing (3D printing)



Source: Popular Archaeology

➔ *Extrusive printers squeeze or spray pastes or powders to build up objects by depositing materials in layers. Binding printers by contrast, fuse, bind or glue materials together, again in a layers.*

Additive manufacturing (3D printing): Case studies



www.poweredbyosteons.org



<https://sha.org/blog/2013/09/the-future-of-the-past-using-3d-replicas-for-public-archaeology/>

➔ *3D print of a bone fragment and 3D Scanner scans an Acheulean Hand axe from South Africa.
Courtesy of the Virtual Curation Laboratory.*