# Bring back the past

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In archaeology and history, visualization is used to virtually reconstruct monuments that have been poorly preserved or which have even disappeared alltogether. Visualization can recover archaelogical finds in a repeatable and nondestructive way, it can also be used to give easy public access to these results, presenting them in multimedia formats. An prominent example for this approach can be seen in [2]. We work with experimental archaeologists in Homburg, a small german town near our campus. They try to reconstruct and visualize the daily life of people in ancient times, for scientific reasons and for public access. They concentrate on two different times in the town history, the roman settlement of Homburg-Schwarzenacker, 2000 years ago, and the 17. Century, when Homburg and its county was conquered by the french troups of Louis XIV.

Since the fifties, excavations show the existence of an old roman settlement. Although the name of this settlement is still unknown, its size of approximately 60 acres revealed the so called "vicus" as an important city on the way between the great roman cities Metz and Trier. The archaeologists reconstructed serial houses, an old column cellar and the house of an ancient oculist for public access. Especially the oculist's home is an well known attraction, the roman technique of floor heatings is partially reconstructed there. With this technique, which is the basis for all modern floor heatings, the roman settlers got a room temperature of 70° Fahrenheit. We decided to explain this technique to the visitors of the museum using an animated simulation. The animation is based on [1], a standard book on heating technology in germany. We used particle systems and space warps in 3DS MAX 3.1 to compute the animation, the explanations are done by a speaker explaining the technical details to the viewer.
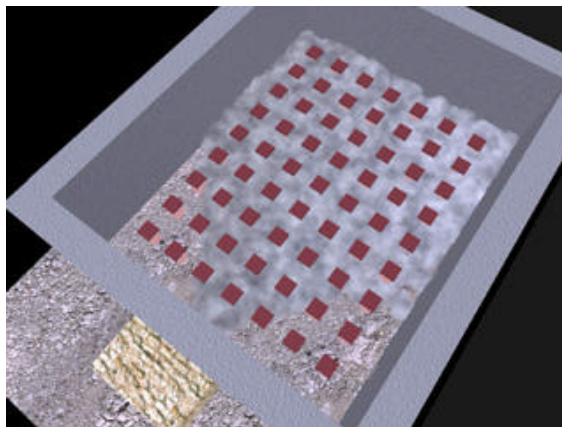


*Figure 1: The floor heating in action*

We decided to reconstruct the whole context of an old roman city, so the visitors of the existing open-air museum will be able to see how life and work was 2000 years ago, and they can see, how the reconstructed area fitted in the whole settlement. The virtual walkthrouhgs will be available as part of a video in september 2000, they are mixed with real scenes filmed in the museum. Plans are to create an interactive virtual walkthrough of the reconstructed roman settlement for the Web and a multimedia kiosk located in the museum.

In the 17. century, the french troups of Louis XIV conquered Homburg and the Hohenburg, a big fortress on top of the town. The french emperor decided to extend the fortress, relying on plans done by Vauban, a famous french constructor. The result was one of the biggest fortresses in that time. Because everything is destroyed today, the basis for the reconstruction are historic plans and excavation results. As a first step we produced an interactive walkthrough on CD. There we present the 3D reconstruction as a movie and the most important historic dates, using a timeline. The users can browse static pictures, comparing the reconstructed fortress and the actual landscape now. The reconstruction relies on the archaeologists knowledge of the look and feel of an fortress in the 17. Century. For textures and the visual appearance we used photographs of related buildings in Bitsch, a french town near to Homburg, where Vauban also constructed a still existing fortress.



*Figure 2: The fortress of Hohenburg*

We will build a virtual museum for Homburg and its county, using the existing 3D data and new locations. There are also plans to use 3D graphics and visualisation techniques for an old monastery near our campus, where there was a big romanic church, comparable to Cluny in France. Most parts of this huge monastery, where the children of the german emperors were educated thousand years ago, was destroyed during the french revolution.

# References

[1] Recknagel, Sprenger: Taschenbuch für Heizung- und Klimatechnik (german), Oldenbourg, 1968.

[2] Jiang Yu Zheng, Zhong Li Zhang: Virtual Recovery of Excavated Relics, IEEE Computer Graphics and Applications, 19(3): 6-11, June 1999. ISSN 0272-1716.