

Archaeological Propection of the Middle Neolithic site Puch/Kleedorf, Lower Austria

The site of Puch/Kleedorf near Hollabrunn north of Vienna is known from aerial archaeology. It is situated on gravel and sand overlain by loess and covers 25 ha. The aerial evidence shows a lot of pits and two circular ditch systems. These circular ditch systems may be dated to the Middle Neolithic (4,800–4,500 B.C.). The archaeological remains show impressive polychrome painted pottery of the Lengyel culture. The most striking expression of the high cultural level of this farmer society are the monumental circular ditch systems situated inside large settlements. These oldest monumental buildings in Middle Europe are formed by up to three concentric circular ditches 40 to 180 m in diameter. The ditches are 4 to 8 m wide and always show a typical V-shape 3 to 6 m deep. They normally have regularly situated interruptions, the entrance inside the monuments. The centre is enclosed by one to five rings of palisades but lack of any other archaeological remains which could help to understand their purpose.

The circular ditch systems Puch and Kleedorf are situated in closest neighbourhood. The distance of the centre of the double circular ditch system of Puch to the single one of Kleedorf is 260 m. They were magnetically prospected using high resolution caesium gradiometers. The site was archeologically interpreted based on GIS combining aerial photos and geomagnetics. The digital terrain model measured from the aerial photos was combined with 3D magnetic modelling results to produce a comprehensive reconstruction of the site using prospection results.

The magnetogram of Puch shows two concentric ditches with 83 m and 60 m in diameter, two entrances and the trace of an inner palisade enclosing a central area of 1,750 sqm. The southern part of the monument is already seriously destructed. The northern ditches are up to 4.5 m wide. The magnetogram of Kleedorf shows a single circular ditch 100 m in diameter formed by single segments of varying length. Again the centre is enclosed by a concentric palisade too. The central area of this monument measures 5,550 sqm exactly the overall size of the monument Puch. The segments of the ditch are up to 40 m in length and partly up to 6 m wide. All around the two monuments many pits could be detected by the magnetic survey as well as by aerial archaeology.

The site of Puch was selected as reference site for testing new magnetic equipment and processing methods. It could be taken out of agricultural use. The site was already prospected using various grids from 0.5 x 0.5 to 0.125 x 0.125 m, different gradients from 1.5 to 2.85 m, resolutions of 0.1 and 0.005 nT producing digital image representations for easy comparison of the various results. Further comparative work is planned including electromagnetic methods and GPR as well as further magnetic surveys carried out with other magnetometers by various prospection teams.




Fig. 1. Caesium gradiometer Picodas MEP750 at Puch/Kleedorf (Lower Austria); 3 sensors in 0.35 m and one sensor in 2.85 m above ground are mounted on a non-magnetic handcart measuring a 2.5 m gradient of the earth magnetic field with a resolution of 0.005 nT in a 0.125 x 0.5 m raster

Fig. 2. Magnetogram of the Middle Neolithic circular ditch systems Kleedorf and Puch and the surrounding areas; total area: 100,400 sqm; raster: 0.125 m x 0.5 m; dynamic range [-5,5] nT

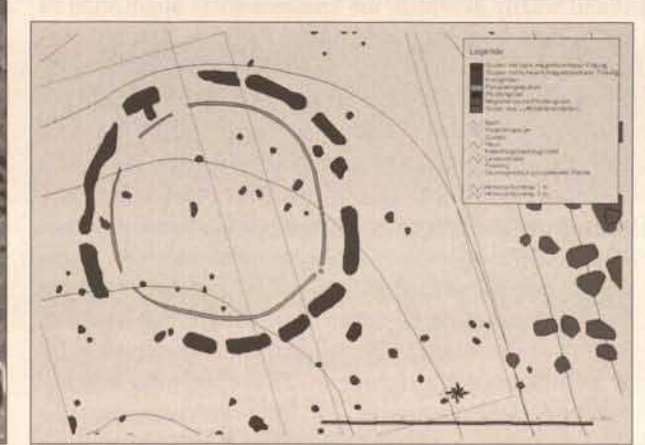
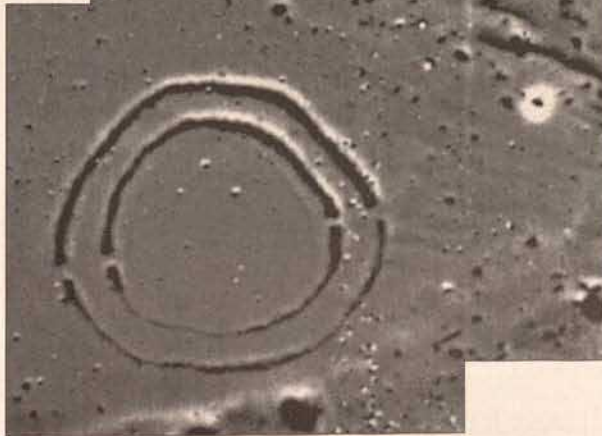
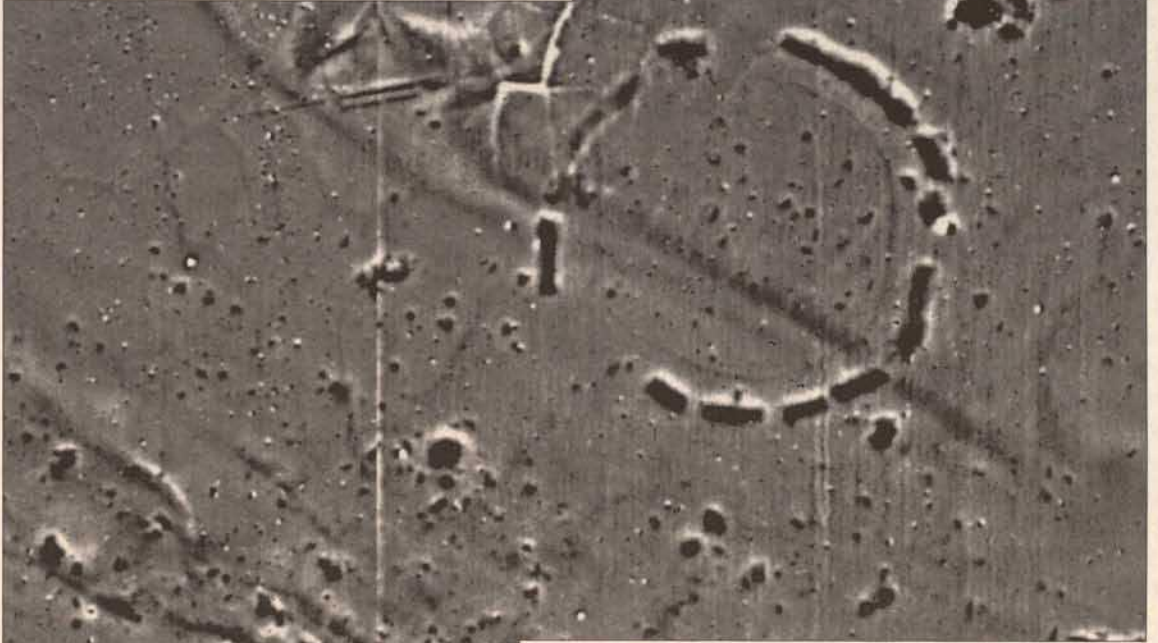
Fig. 3. Archaeological interpretation of the double circular ditch system Puch.

Fig. 4. Archaeological Interpretation of the single circular ditch system Kleedorf

Fig. 5. Photorealistic visualisation of the reconstructed circular ditch system Puch; the depth of the ditches are modelled by the magnetically prospected data and intersected with the digital terrain model; the aerial photograph is draped on it



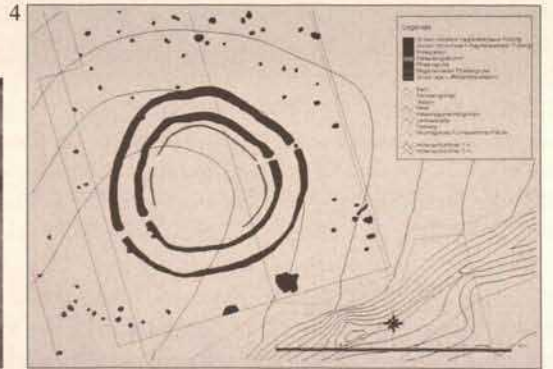
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