WORLD WAR ONE FROM A BIRD'S-EYE VIEW

A LANDSCAPE CHARACTERISATION OF BELGIUM' S WAR ZONE SEEN FROM THE AIR

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Over the years, the department of Archaeology at UGent collected more than 6,500 aerial photographs of the Belgian war zone. The "Great War Aerial photography database" contains the most important collections of World War One aerial photographs, gathered from various museums and archives around the world. The majority of aerial photographs cover the Belgian western front zone and gives insights in the state the battle zone as well as the hinterland between 1914 and 1918. Also 46 photographs were discovered covering the German defence around the city of Antwerp; which was build by the German occupier for fear of an attack from the Netherlands. Each photograph was scanned, got a unique number, was localized and georeferenced in a GIS-environment. The collection is an important data source for the inventory of the war traces visible on the photographs. The resulting database contains currently almost 27,000 features related to WWI detected by interpret aerial photographs. In a next research phase a landscape analysis was executed to get insights of the context of the listed military elements. In this paper we want to present two case studies showing the potential use of aerial photographs for both archaeological inventory of war traces and the landscape interpretation, also showing the interdisciplinary collaboration between archaeologist and landscape geographers.

The first case study, “Reconstruction and remaining landscape elements from WWI – South Ieper” went beyond the inventory of military features with a landscape analysis of the land uses and the linear structures before, during and after the war period. The purpose was to asses to what extent the landscape was rebuilt after WWI and if the change trajectories of the landscape have an influence on the presence of war features. Subsequently, we wanted to know which landscape elements of WWI still exist in the current landscape. The landscape characterisation was based on the interpretation of four series of aerial photography: the black and white aerial photographs (KLM/IWM and IFFM) of 1915 visualising of the pre-war landscape, the photos of 1918 representing the war landscape, the black and white photos (RCAHMS) of the 1940’s indicating of how the landscape was reconstructed or changed after WWI, and the coloured orthographic photography from the National Geographic Institute of Belgium giving the situation around the year 2002-2003. The landscape characterisation confirmed that a large part of the land uses and linear structures was destroyed during the war. Moreover, the trajectories showed that the post-war landscape of 1940 has quite some resemblance with the pre-war landscape, meaning that the landscape has been reconstructed after WWI: almost 80% of the current land use, mainly agricultural land, is similar on the pre-war landscape. A smaller part got a new destination and only 1.16% was preserved. The linear structures however show a different result. The largest amount (38.92%) got a new destination, a slightly smaller part was preserved, and a third part was reconstructed. The conserved elements contain mostly roads, railways and paths.

The second case study uses the 46 photographs taken by the German lieutenant Zimmermann in January 1918 during three flights named ‘Kaiserliche Fortification Antwerpen’. After the localisation and interpretation of the photographs mapping the war features, a field inventory of the conserved military elements was done. More than 530 military elements of defense were identified on the photographs. In total 472 military elements were found during the fieldwork, more than 10 kilometer trenches and almost 400 bunkers. The quantity, diversity and quality of the military elements are not only unique for Belgium but also in Europe. The photographic interpretation and field inventory showed differences. Structures like barbed-wire were clearly visible on the photographs but were all removed after the war and thus no longer visible in today’s landscape. On the other hand, bunkers were hard to recognize on photographs, but due to their vast structure they were hard to remove and thus still visible in the landscape. Simultaneously with this field inventory, an analysis of the historic landscape was executed. A huge number of the military elements are still remained in today’s landscape, although they are situated in a highly dynamic landscape since the last 100 years. For example the area around the canal Dessel-Schoten changed from a mainly rural area to a strongly urbanized area with industrial zones around the canal. A relation between the land use form and

preservation of the relicts was found. Most of the military elements (54%) were found in wooded areas, since they are the most stable and ancient land use in the research area. No trenches were found in built areas, however a large amount of bunkers was well preserved. Nowadays most of these bunkers have another function (garage, stable, wine-vault, habitat for bats etc.). The smallest amounts of relicts were recognised in agricultural land uses. Because of the leveling of the cropland, trenches disappeared and also bunkers were made to sink into the ground by farmers. The results of the archaeological inventory and landscape analysis formed the basis for a general vision on the future of these military relicts, focusing on the heritage preservation and raising awareness.

The interdisciplinary approach of combining landscape analysis and archaeological research based on aerial photography, has led to valid results. This methodology can be considered both successful and to be recommended. This interdisciplinary approach will be used on a larger scale in the new research project "Non-invasive Landscape Archaeology of the Great War", using the Great War Aerial photography database. A combination of geophysical soil sensing, remote sensing archaeology, historic and visual landscape analysis research will be integrated in a cartographic assessment model of the expected remains of WWI features. This model will result in a procedure for creating valuation maps of the WWI heritage.

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