

FILTERING IN THE FREQUENCY DOMAIN AIR DIGITAL IMAGES OF ARCHAEOLOGICAL SITES IN ORDER TO WEAKEN OF INFORMATION NOISE

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Aerial archaeology is based on interpretation of aerial photographs. Archival aerial photographs are valuable and widely used, however their frequently low technical quality makes it difficult to reveal their potential merits. This paper introduces the possibilities of improving the information and photographic quality of archival aerial pictures of: Wysoczyzna Elblaska coastal zone in the region of Janow Pomorski, hillfort in Barczewko and settlement in Gierloz in north-eastern Poland. Aerial photographs taken by the author over 30 years, with the application of all available photographic techniques constitute the main database regarding the chosen archaeological landscapes. At present, numerous photographs are seen as technically imperfect but they contain reveal able and invaluable data concerning archaeological structures.

Photograph's faults seen as information noise it is nothing but regular prints of the plate that presses photosensitive material towards the background frame, authentic picture of the lines, traces of ploughing and plant rows in the corn field.

As the result of carried out research it may be stated that the application of Fourier transform for improving information capacity of digitized aerial photographs is possible when the clutter consists of regularly repeating elements. Each picture has to be referred to individually by creating filters correspondent to the characteristics of occurring noise.

The removal of the clutter has been performed according to the following scheme:

- by applying discrete Fourier transform, source picture spectrum was generated,
- the elements suspected of containing clutter information were deleted,
- inverse discrete Fourier transform was applied to the new function of the spectrum corresponding to the picture of improved properties.

With respect to the first two areas, satisfying results have been achieved. Visual quality has improved to such an extent that previously illegible traces of former river beds and cultural layers were easily recognizable. No operative means for removal of the row sowing traces in Barczewko hillfort have been found.

