GPS POTENTIALITIES(STRATEGIES) FOR SUPPORTING ARCHAEOLOGY: PREVENTIVE INVESTIGATION AND MEMORY OF AN EXCAVATION

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How can a high technology, such as positioning by means of satellites, be useful for archaeological excavations? Is it possible for an advanced methodology to be a supporting tool for the past memories? Could it mean an efficient way to preserve cultural heritage and make it available and visible for interested people? The answer to those questions is definitely yes, it is: GPS (Global Positioning System) technology can be a very efficient and successful tool to strongly increase the information and knowledge resulting from an archaeological excavation. Many potentialities belong to GPS concerning archaeology applications such as georeferencing the investigated area in order to collect in a GIS (Geographic Information System) all information about the several excavations located in the same area; surveying the area in order to obtain a DTM (Digital Terrain Model) and carefully analyze it in order to find out information about the best site where the excavation should be planned (preventive analysis) and also mapping the excavation, once it has already been carried out, together with all details appeared within it in order to take memory of everything and continue the analysis after it is closed.

Two cases of study will be presented in order to better and deeply explain the potentialities of GPS solutions for archaeology: an ancient roman arch located in Croatia and a pre-columbian settlement/ ceremonial site in Peru. The Croatian site, whose name is Burnum, is located close to Sibenik within the KrKa National Park. Just a big roman arch is still visible in the area, but further structures and archaeological finds are probably hidden under the ground. Where should the archaeologists plan the excavation? Taking into account the penury of fundings, is there a way to efficiently plan the excavation in order to increase the probability to find the best site? Integrating the tradition and high technology was a successful strategy: a kinematic GPS survey was performed all over the area in order to extract a DTM with the final purpose to change the weight given to the elevation information. This allowed to clearly figure out an hidden morphology of the ground, that means to be able to identify where structures probably are located. Just looking at the open field, nothing helped to choose a site, but GPS provided a successful way to optimize both human and economic resources. Moreover the Peruvian site, whose name is Nawpamarca, is located in the Acopalca district - Huari, Ancash close to the Puruhuay Lake. Particularly, the archaeological site is in high mountain, 4300 m of elevation. This means difficulties when operating during the excavation and a reduced time for studying the discovered information. The GPS was here helpful because it was used to map all the excavation details (structures, an ancient stairs and so on) in order to be able to analyze and deeply study all new information in a correct metric description, once the excavation is closed. Indeed, archaeologists need to leave the site but they probably still have a lot of questions. This way, they can find answers by comfortly sitting in their office and thanks to GPS solutions they can reconstruct the site which is then available to be shown to the world.