

## Uncovering Secrets with Remote Sensing

Recent significant discoveries in Cambodia and Jordan have highlighted the potential offered by remote sensing and satellite imagery to help uncover secrets on Earth – a field known as satellite archaeology.

### Cambodia

Helicopter mounted Lidar was used to reveal multiple cities beneath the forest floor near the ancient temples of Angkor Wat in Cambodia. Lidar, which stands for Light Detection and Ranging, is an active optical remote sensing technique that uses a laser scanner to map the Earth's topography by emitting a laser pulse and then receiving the backscattered signal. In Cambodia, a topographic Lidar with a near infrared laser was used by Australian archaeologist Dr Damian Evans to survey beneath the forest vegetation.

The conurbations discovered, surrounding the stone temple Preah Khan Kompong Svay, are believed to be between 900 to 1 400 years old. Analysis of the survey has shown a large number of homes packed together like terraced houses, together with structures for managing water and geometric patterns formed from earth embankments – which could be gardens.

At 734 square miles, the 2015 survey is also thought to be the most extensive of its type ever undertaken. Dr Evans work is due to be published in the [Journal of Archaeological Science](#).

### Jordan

Archaeologists using high resolution satellite imagery, drones surveys and imagery within Google Earth have discovered a huge structure buried in the sand less than a kilometre south of the city of Petra. The two high resolution satellites used were Worldview-1 and Worldview-2, operated by DigitalGlobe. Worldview-1 was launched in September 2007 and has a half-metre panchromatic resolution; Worldview-2, launched two years later, offers similar panchromatic resolution and 1.85m multispectral resolution.

The outline of the structure measures 56m x 49m, and there is a smaller platform contained inside the larger one. Nearby pottery finds suggest the platform is 2 150 years old, and it is thought that it had a ceremonial purpose. The research undertaken by Sarah Parcak and Christopher Tuttle was published in the May 2016 edition of the [Bulletin of the American Schools of Oriental Research](#).

### Benefits of Remote Sensing & Satellites

Angkor Wat and Petra are both World Heritage sites, and the benefits of using remote sensing and satellite technology to undertake archaeological investigations are evident in the [statement](#) from Christopher Tuttle who noted that they did not intend to excavate their Petra discovery as 'The moment you uncover something, it starts to disintegrate.'

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Satellite technology allows investigations to take place without disturbing a piece of soil or grain of sand, which is a huge benefit in terms of time, cost and preservation with archaeology. These two discoveries also demonstrate that the world still has secrets to reveal. As Sarah Parcak herself said in 2013, [“We’ve only discovered a fraction of one percent of archaeological sites all over the world.”](#)

Who knows what remote sensing and satellite imagery will uncover in the future?