

RECONSTRUCTING A DOLMEN

July 11, 2014 Tom Goskar Community Archaeology, Day of Archaeology 2014, Digital Archaeology, Neolithic 3D, Carwynnen Quoit, Cornwall, dolmen, entrance grave, megalithic, photogrammetry, Prehistoric Europe, reconstruction

Today is a busy one for me. I'm writing this on an overcrowded train to London on the first stage of a journey to the USA. It's for pleasure not work, although as many archaeologists will tell you, at times the division is a blurry one.

For the past few months I've been working on a number of interesting projects. I have been working with [Sustrust](#) on the [Giants Quoit](#) project. For the last four years they have been working tirelessly with the Cornwall Council Historic Environment Service to excavate the site of Carwynnen Quoit near Camborne in Cornwall.

The dolmen (an entrance grave with three orthostats, or uprights, topped with a large flat capstone) fell down in 1842, and being a popular local landmark it was re-erected shortly afterwards. Unfortunately, in 1966, after an alleged earth tremor, it fell down once again. This time, the stones remained in a pile, and memories of the Quoit faded. In 2009 Sustrust bought the five acre field where the remains of the dolmen lay, and began to hatch plans to re-erect it.

My involvement came earlier this year, 2014, when I was asked to virtually reconstruct Carwynnen Quoit from existing laser scans of the individual stones and to investigate a number of other stones that had the potential to contain rock art. Armed with large quantities of 3D and excavation data and a number of historic photos from different angles, I busied myself with moving the modelled stones around on screen. One of the decisions made early on by the whole team was to reconstruct the quoit as it could have appeared thousands of years ago. Our historic images of the monument show the orthostats leaning at dangerous angles, having spent millennia being persuaded by gravity to cease trying to defy it, gradually tilting before collapsing.

Setting the stones upright by archaeologically studying the sockets in the ground and wear on the capstone meant that the Giants Quoit (as it is locally known) could stand again for, hopefully, millennia. It will never be exactly the same as the quoit was when originally built some 4500 years ago, but close, and importantly, safe, so that people can enjoy and engage with the monument.

I visited Carwynnen Quoit on a rainy day back at the beginning of May and it was a hive of activity. A school visit was in progress with a large marquee was set up as an outdoor classroom, with demonstrations of ancient technology such as honeysuckle rope construction, pottery, and theories about how the stones were originally moved. Lessons in poetry and art were planned for later in the day. I'm sure that day will have an influence on them for years to come – considering that local schools were also involved in the excavations of previous years, I wouldn't be surprised if the seeds of a few embryonic archaeological careers haven't been sown.

Using photogrammetry I made very detailed 3D models of the stones thought to contain rock art, and got a good feel for the site and how it may have appeared during the late Neolithic. We also crowded around the computer to continue to twist and move stones to help inform the reconstruction. It was decided to make a triangular wooden template to make sure that the orthostats would be positioned correctly.

Back at the office I processed the images of the rock art stones – the “Shield Stone” and “Coffin Stone” – into 3D point clouds and began to use a number of techniques to enhance details cut into the surface of the stones. I came to the conclusion that the marks on the Coffin Stone were mainly natural, although human-influenced, perhaps as a result of ploughing, dragging or even an attempt to dress it at some point. It is tempting to see a series of intersecting lines which form uneven diamond or lozenge patterns as deliberate, but they’re easily formed unintentionally.

The Shield Stone is interesting. The markings are deliberate, but I remain to be convinced that they were part of a singular design.



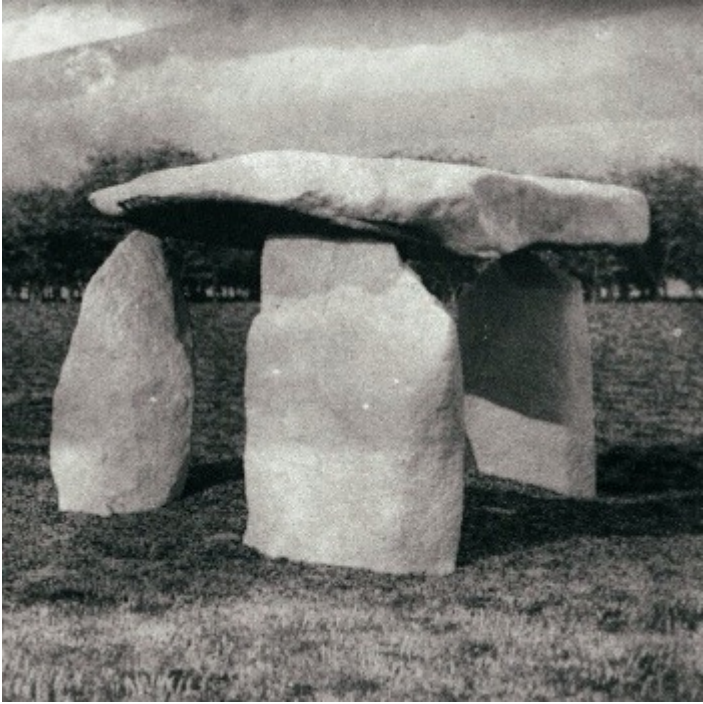
Photogrammetry of the reconstructed orthostats

The 3D point clouds allow all kinds of analysis to take place that you cannot do physically, such as colouring the stone by depth to enhance details cut into the stone (they show up as a different colour to flatter parts) and removing distracting details such as the natural colours of the stone.

To match one of the historic photos of Carwynnen Quoit, an Edwardian picnic is being organised where participants will dress in period costume, eat lunch, and pose for a real plate photograph. Sadly, I’ve just

had to reply to the invitation explaining that I'll still be in the USA when it happens – I'd never normally turn away the opportunity for a 'proper' antiquarian day out!

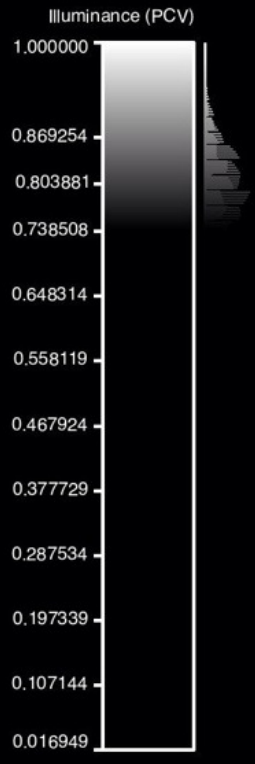
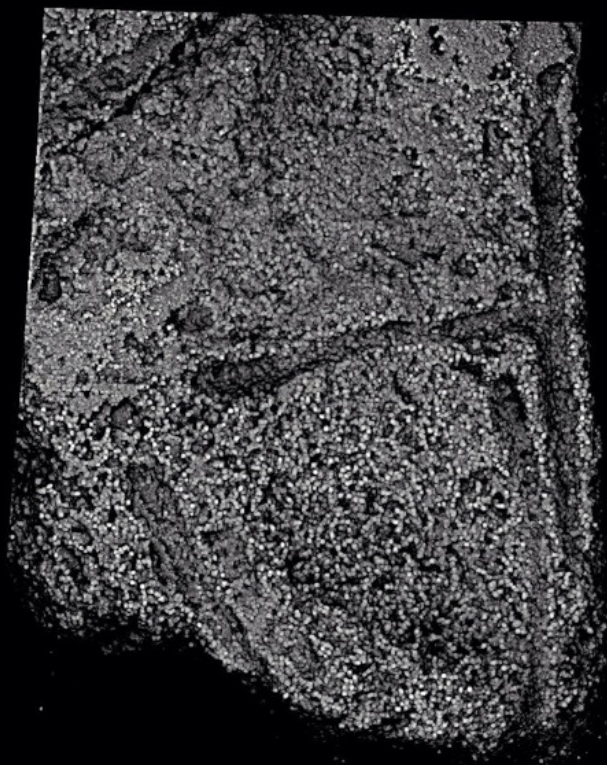
Below are a few of the images that I created for the project. Visit the [Giants Quoit](#) website to find out more, and be sure to come back to the Day of Archaeology site to explore more of the amazing posts submitted today.



Simulated glass plate image of the 3D reconstruction



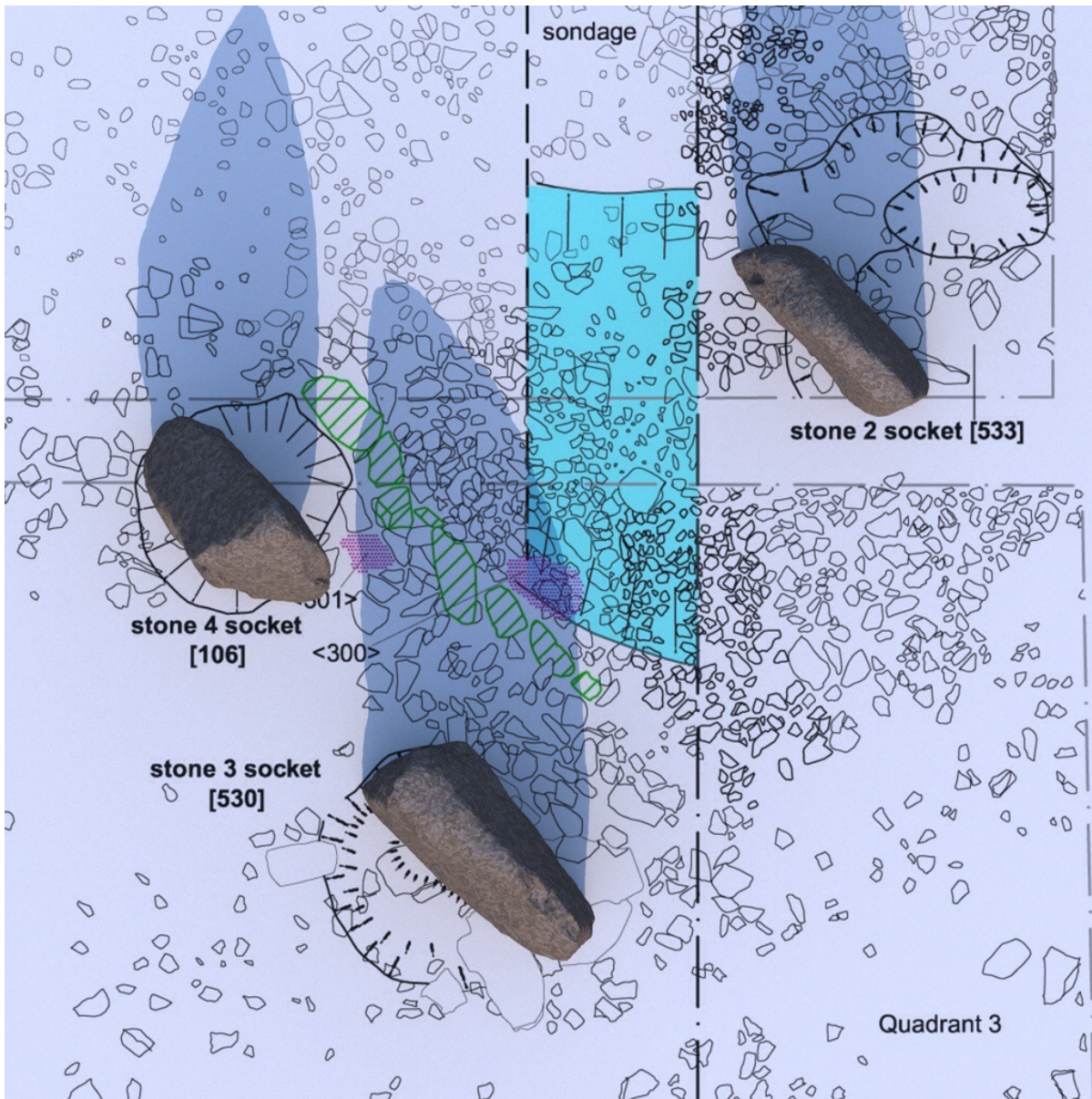
Carwynnen Quoit reconstructed from laser scan data, placed upon the excavation plan
by T. A. Goskar <http://tom.goskar.com/>



One of the images created for the analysis of the 'Shield Stone' near Carwynnen Quoit
by T. A. Goskar <http://tom.goskar.com/>



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Laser scanned orthostats placed upon the excavation plan