

Sound effects inspired Stonehenge: US scientist

February 16 2012, by Kerry Sheridan



Stonehenge. Image: Wikipedia.

Ancient legends of thunder gods can be explained today with the modern science of sound waves, said a US scientist on Thursday who believes an auditory illusion inspired the creation of Stonehenge.

The famous, 5,000 year-old stone circle in Britain is one of the best-known [world heritage sites](#) and many have guessed at the reasons for its existence, from a prehistoric observatory to sun temple to sacred healing ground.

Steven Waller, who has studied cave art for 20 years and cultivates a particular interest in the sounds of ancient sites, thinks that a [sound](#) wave effect that scientists understand today was so mysterious back then that

it compelled people to erect [Stonehenge](#).

The phenomenon is known as acoustic interference. It happens when two sources of sound, such as two bagpipers, are playing the same note at the same time from different places in a field.

As a listener passes, the [sound waves](#), rather than aligning to make the noise louder as one might expect, actually bounce off each other to create a wavering, muffling effect.

"You hear the sound modulating between and loud and quiet," Waller told reporters at the [American Association for the Advancement of Science](#) conference in Vancouver.

"That would have been a very mysterious phenomenon, totally inexplicable. You would think that two pipers playing would sound louder than one piper but as you walk around it modulates and there are some places where it is almost completely silent," he said.

"So the net result... is this ring of invisible objects, massive objects blocking the sound. And it occurred to me that that is very similar to the structure of Stonehenge."

Legends back up the notion, too, like the tale of the two magic pipers who led some maidens to dance around in a circle and they all turned to stone, Waller recounted.

But being a scientist, legends were not enough to satisfy his curiosity, so Waller set up an experiment to test his theory with modern people wearing blindfolds and experiencing the same auditory illusion as the pipers in a field scenario.

"I asked them what was between them and the sound," Waller said.

"They drew pictures that are very similar to Stonehenge. They pictured these massive objects blocking the sound, where it was really just sound wave cancellation."

Waller also found that when he tested the site itself, placing a sound source in the center of Stonehenge and then walking around to hear how it came across, the same blocking, modulating effect could be heard.

Still, he remains convinced that the sound illusion came first, inspiring the erection of the stone circle with its 17 upright blocks of sandstone, which weigh up to 45 tons, topped with six lintels aligned towards the direction of the sunrise on the summer solstice.

"As a result of that auditory illusion and that vision of stones that they could hear but not see, that is why they built Stonehenge," Waller said. "They made that vision concrete, so to speak, by actually building the temple."

Waller said his theory doesn't necessarily conflict with others that suppose a solar purpose, because both indicate the site was a mystical place where people tried to understand the makings of the universe.

"Stonehenge is one the big mysteries of the past. Yes, there are a lot of theories but they are all controversial, none of them really explain... None of the theories really add up."

He also urged contemporary society to take care to preserve the acoustic past of our predecessors and the archeological sites we hold dear, and cautioned against destroying them through practices such as widening ancient caves for easier tourist access.

"Nobody has been paying attention to the sounds. We have been destroying the sounds," he said.

"The ancient people didn't know about sound waves. It was magic. That is why we need to preserve and study the soundscapes of archeological sites."

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Citation: Sound effects inspired Stonehenge: US scientist (2012, February 16) retrieved 29 April 2024 from <https://phys.org/news/2012-02-effects-stonehenge-scientist.html>

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