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Mayans 'played' pyramids to make music for rain god

16 September 2009 by [Linda Geddes](#)
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SIT on the steps of Mexico's El Castillo pyramid in Chichen Itza and you may hear a confusing sound. As other visitors climb the colossal staircase their footsteps begin to sound like raindrops falling into a bucket of water as they near the top. Were the Mayan temple builders trying to communicate with their gods?

The discovery of the raindrop "music" in another pyramid suggests that at least some of Mexico's pyramids were deliberately built for this purpose. Some of the structures consist of a combination of steps and platforms, while others, like El Castillo, resemble the more even-stepped Egyptian pyramids.

Researchers were familiar with the raindrop sounds made by footsteps on El Castillo - a hollow pyramid on the Yucatán Peninsula. But why the steps should sound like this and whether the effect was intentional remained unclear.

To investigate further, Jorge Cruz of the Professional School of Mechanical and Electrical Engineering in Mexico City and [Nico Declercq](#) of the Georgia Institute of Technology compared the frequency of sounds made by people walking up El Castillo with those made at the solid, uneven-stepped Moon Pyramid at Teotihuacan in central Mexico.

At each pyramid, they measured the sounds they heard near the base of the pyramid when a student was climbing higher up. Remarkably similar raindrop noises, of similar frequency, were recorded at both pyramids, suggesting that rather than being caused by El Castillo being hollow, the noise is probably caused by sound waves travelling through the steps hitting a corrugated surface, and being diffracted, causing the particular raindrop sound waves to propagate down along the stairs (*Acta Acustica united with Acustica*, DOI: [10.3813/AAA.918216](#)).

El Castillo is widely believed to have been devoted to the feathered serpent god Kukulcan, but Cruz thinks it may also have been a temple to the rain god Chaac. Indeed, a mask of Chaac is found at the top of El Castillo and also in the Moon Pyramid. "The Mexican pyramids, with some imagination, can be considered musical instruments dating back to the Mayan civilisation," says Cruz, although he adds that there is no direct evidence that the Mayans actually played them.

Francisco Estrada-Belli, an archaeologist at Boston University, Massachusetts, says: "Most if not all Maya pyramids were conceived as sacred mountains, which were the places where the clouds gathered and created rain." However, while the acoustics may have emphasised the metaphor of water, "the fact that there were echoes around them does not mean that they were musical instruments", he says - adding that Mayan texts do not mention such a use.

Elizabeth Graham of University College London points out that the pyramids have been restored. "The authors need to provide a good reason for why they think the restored building surfaces are enough like ancient building surfaces," she says.

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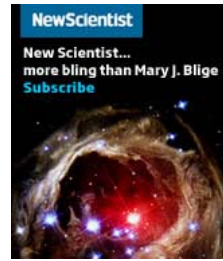
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Sacred Sounds

Thu Sep 17 18:31:18 BST 2009 by [Jeremy](#)

It seems unlikely that designing the pyramids to produce this sound could be done without a lot of trial and error construction, and I doubt if the Mayans had enough experience building new and improved pyramids over many years to do this.

However, their written language consisted of hieroglyphics and they had musical instruments, so who knows how they recorded sound or what they considered as sacred sounds. Western cathedrals were designed with acoustic effects in mind, although these were mostly an artefact of sound bouncing off the stone interiors that resembled Pagan ritual sites deep in forests. It's more the other way around: music was composed *for* the cathedrals' acoustics.

I recall an image recovered by an archaeologist of a Mayan playing a flute that had various-sized round bubbles floating in the air above the flutist. Intuitively I thought the bubbles represented musical notes. But who knows. We may never know what sounds they made or how they used their pyramids

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