those who have not visited the Baptistry of Pisa, and sonically/aurally first-hand witnessed the demonstration of the amazing acoustical properties of this building by one of the attendant guards, I will describe my own experience.

In 1982, my wife and I visited friends in Pisa, and so of course we also visited the Leaning Tower, the Cathedral (Duomo), and finally the Baptistry of Pisa. We were especially attracted to the latter, as we noticed many other visiting tourists going inside. This piqued our curiousity as to what was inside. Shortly after we entered the Baptistry, the guard inside asked us (in Italian) to all be quiet. After a short pause, when all the people inside had quieted down, the guard angled his head toward the dome of the Baptistry and sang, in succession, three notes of a major C triad – the highest note first G, then the middle note E, then the lowest note C, at the rate of roughly one note per second. These notes were not randomly chosen by the guard, but deliberately so chosen – they were apparently resonant frequencies of this building – but we tourists didn't know this at that point in time…

The totality of the sound associated with this man's singing of a major triad literally rose up, over a period of a few seconds, from the ground-floor interior portion of the Baptistry, and into the dome region of Baptistry, where it circulated and reverberated/swirled around in a 3-dimensional manner at the top of the dome – this effect was very clear/pronounced, and as it did so, the harmonic content and complexity of the sound also slowly evolved over time – apparently due to the frequency-dependent absorptive properties of the dome. The sound of this human-generated major triad evolved from what initially started off as recognizably human into a gloriously complex, temporally and spatially-changing sound that was beyond human – all of us tourists upon experiencing this were totally stunned and amazed! This rich, complexly reverberant sound circulating in the dome of the Baptistry of Pisa could still be heard after what seemed to be an amazingly long time – well over three minutes, it seemed! It was a fantastic experience!

Thus, one can now better appreciate the experience it must have been for Palæolithic visitors to these caves in southern France, making sounds and singing in dimly-lit conditions at these especially resonant locations inside these caves, ~ 20-25 thousand years ago!

In Tibet, there are temples where for centuries monks have chanted at the resonant frequencies of the temple. If one e.g. "thunks" the side of these temples, indeed, they resonate at these chanted frequencies!

Today we have dedicated, scientifically-designed concert halls for people to enjoy music at. The author also smiles, remembering his own experiences recording country/folk-style music played on acoustic guitars with some friends in the concrete stairwell in the 12-story high Sanford Hall dormitory at the University of Minnesota back in the early-mid 1970s… Playing in this stairwell, effectively ~ 120 ft long, vertical closed-closed organ pipe was great fun – it had glorious echoes, wonderful resonant & reverberant properties!

S. Errede wishes to thank Pam Carsey, a local musician-friend of his here in Champaign-Urbana, for initially bringing to his attention the musical historical aspects of the Palæolithic caves in southwestern France.



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