

Acoustics of Sacred Sites

In northern Finland, near the canyon lakes of Julma-Ölkky, Somerjärvi and Taatsijärvi, steep rock cliffs produce distinctive acoustic spaces. On these cliffs, prehistoric rock paintings (5200–500 BC) as well as an ancient Sámi offering site (circa 1100 to present) can be found. Ethnographic sources describe that the Sámi used to sing and listen to echoes while making offerings there. This paper presents the results of an archaeoacoustic research project that seeks to explore the role of sound in the development and use of these archaeological sites. The applied methods include multichannel impulse response recording, angle of arrival estimation of early reflections, spectrum analysis, digital image processing and 3D laser scanning. On the basis of the analyses, it is concluded that the cliffs that have been painted or held as sacred are efficient sound reflectors. They create discrete echoes and, accordingly, phantom sound sources. Especially at the Värrikallio cliff near Lake Somerjärvi, the sound appears to emanate directly from the painted figures. These results, together with previously unnoticed drumming figures in the Värrikallio painting, provide a clue to the significance of the sound rituals at these sacred sites.

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