

# Harmonic Bridge

by

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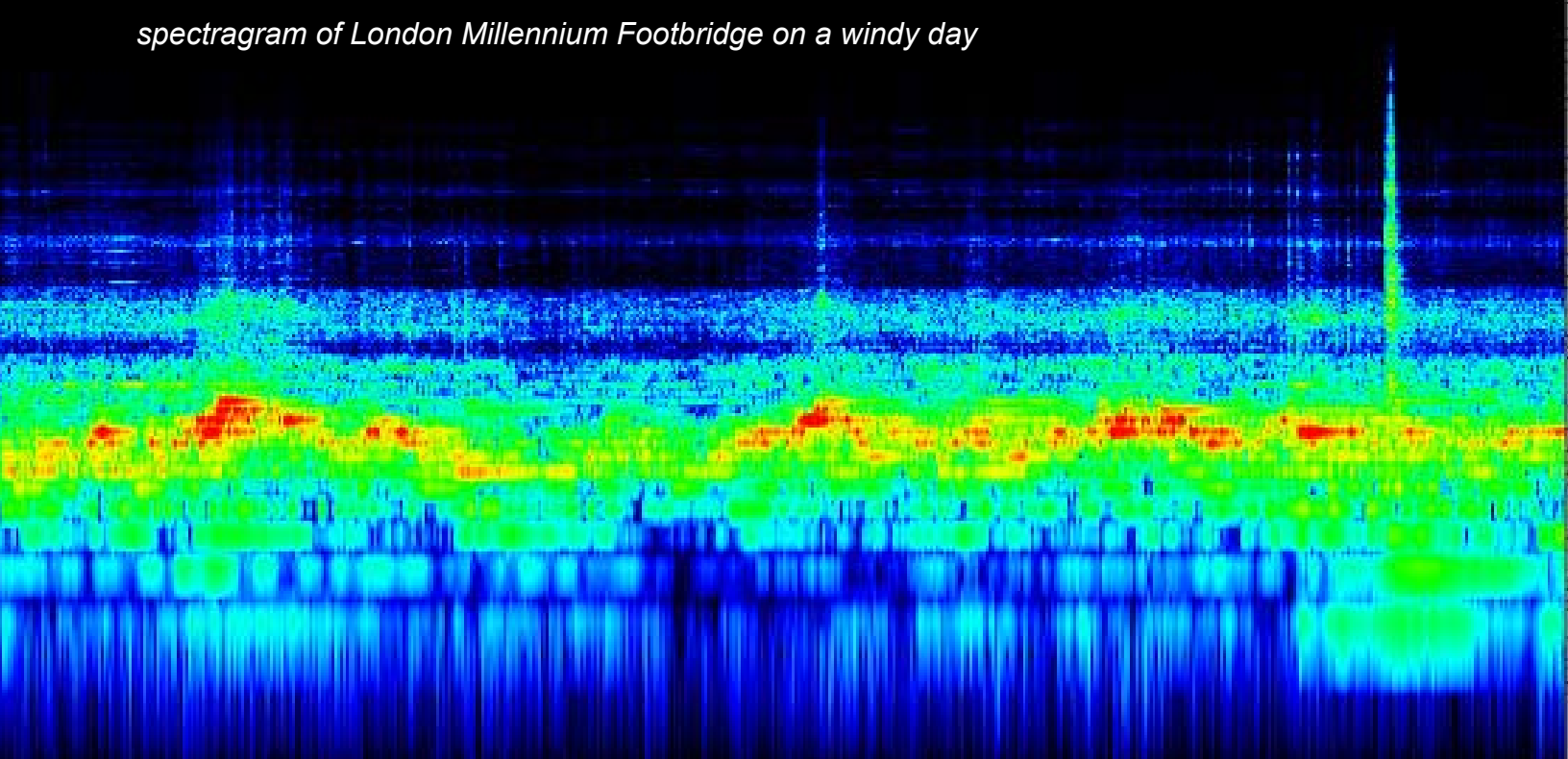




## Summary

This sound sculpture will explore the musicality of sounds hidden within the structure of the London Millennium Foot Bridge. This bridge is alive with vibrations caused by the bridge's responses to the collective energy of footsteps, load and wind. This sonic world is inaudible to the ear when walking over this bridge. It will be revealed by the use of the accelerometers (which are vibration sensors) that are listening to the inner dynamic motions of the bridge. Harmonic Bridge will be realized by installing a network of live accelerometers on different parts of the Bridge in order to acoustically map in real time its hidden musical life. The live sonic mapping will be translated into an acoustic sculpture by carefully rendering sounds from this listening network into a spatial matrix of loudspeakers. This sculpture will not only render the natural acoustic movements of the Bridge, but will tune the presence of this live sonic data to the characteristics and architecture of the two spaces in which the work is presented: the Turbine Hall of the Tate Modern, and the Main Concourse of Southwark Station of the London Underground.

*spectrogram of London Millennium Footbridge on a windy day*

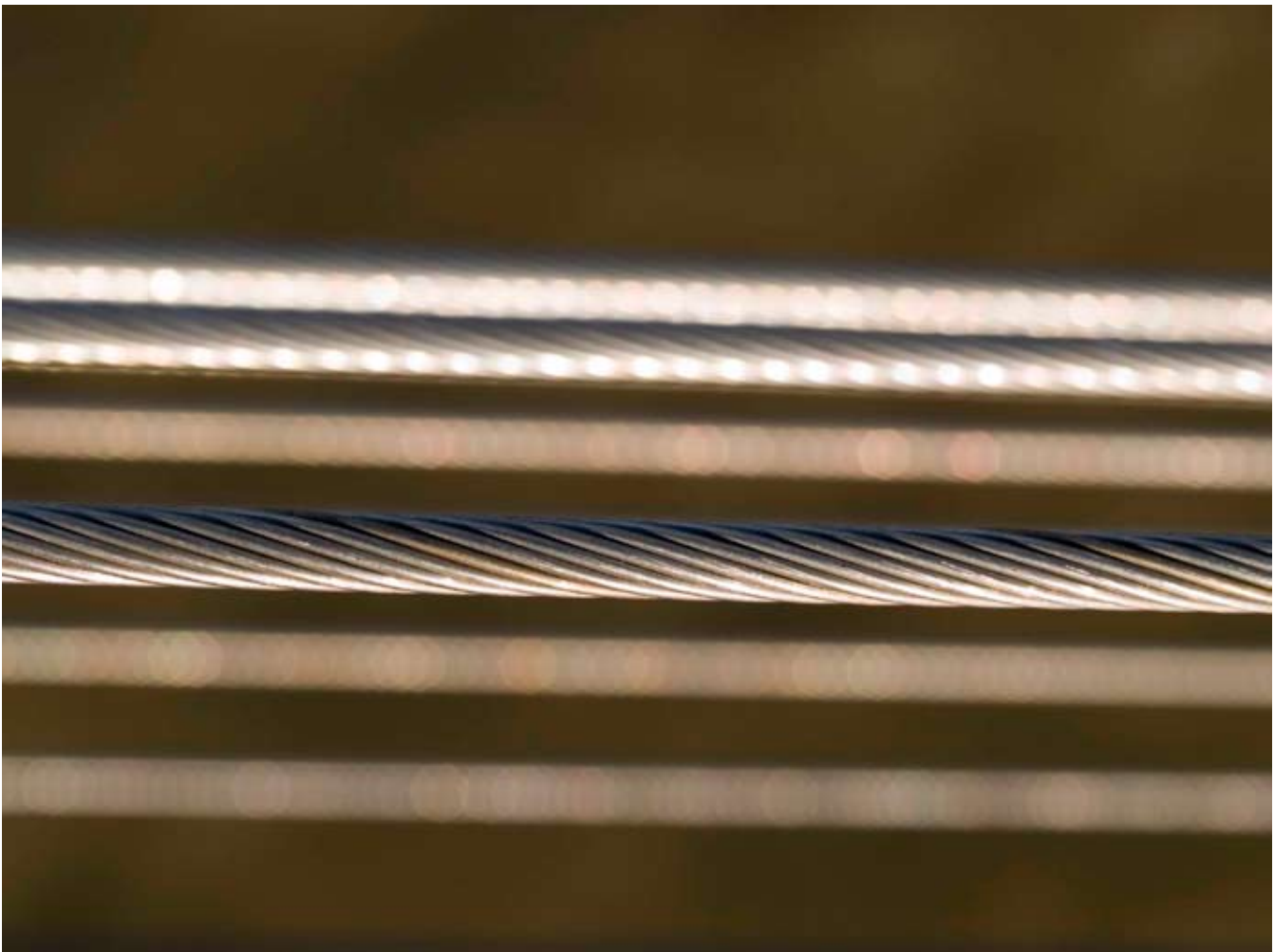






## SENSOR NETWORK ON THE BRIDGE

A network of accelerometers will be placed on various cables and structural parts of the Millennium Bridge to find the ideal points from which to simultaneously listen to it. In order to develop and design this listening network, it will be necessary to collaborate with ARUP (who designed the bridge) on making a series of experimental sensor placements and multi-channel recordings. These will be used to model what this sound sculpture will be, how to design and install the network of accelerometers and how to transmit these musical data streams to the London Underground and Tate Gallery. These multi-channel recordings and studies of the Bridge may also be used to create a recorded version of this work, in case it proves too difficult or expensive to realize it as a live installation.



## Tate Modern - Turbine Hall

The presence of Harmonic Bridge in the Turbine Hall of the Tate Modern will give new meaning to this bridge being a metaphor for linking St. Paul's and the Southwark side of the Thames. The low percussive tones of the bridge produced in response to wind and the loading of the large structural cables will resonate with the acoustics and 100 hertz of the Turbine Hall, creating an immersive and sensual experience for visitors. The work would enter the space as a slow moving wave, emerging from the ground tone of the background hum and then slowly decaying back into it.



## London Underground - Southwark Station

A realization will be made for the London Underground at Southwark Station that is simultaneous with the installation in the Turbine Hall of the Tate Modern. This Station is the principle Underground Station for visitors to the Tate Modern, and the presence of this sound sculpture will form a link to these two amazing spaces.



Eight loudspeakers will be mounted facing down from the catwalks in the space. This would give the work a dynamic and sensual presence.

