



DISPERSION OF SOUND WAVES IN ICE SHEETS

as recorded by Andreas Bick

I made this sound recording of a frozen lake in the winter of 2005/06 in the area around Berlin. Frozen lakes are known to give off most noise during major fluctuations in temperature: the ice expands or contracts, and the resulting tension in the ice causes cracks to appear. Due to the changes in temperature, the hours of morning and evening are usually the best times to hear these sounds. In my experience, thin ice is especially interesting for acoustic phenomena; it is more elastic and sounds are propagated better across the surface. Snowfall, on the other hand, has a muffling effect and the sound can only travel to a limited extent. The ice sheet acts as a huge membrane across which the cracking and popping sounds spread. Underwater microphones proved especially well-suited for these recordings: in a small hole drilled close beneath the surface of the water, the sounds emitted by the body of ice carry particularly well. The most striking thing about these recordings is the synthetic-sounding descending tones caused by the phenomenon of the dispersion of sound waves. The high

frequencies of the popping and cracking noises are transmitted faster by the ice than the deeper frequencies, which reach the listener with a time lag as glissandi sinking to almost bottomless depths.

I have used this recording in my piece *Frost Pattern*, released by the German label GRUENREKORDER in December 2010 – together with its twin composition *Fire Pattern*.

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Sound recording and text by Andreas Bick (*andreas-bick.de*).
Photos of ice structures by Heinz Peter Kapteinat.
Layout by Daniel Knaf (*knaf.code23.de*).

FIRE AND FROST PATTERN

a voyage into the sound patterns of extreme temperatures

The artistic process here is concerned primarily with making audible the 'secret' sounds hidden in nature, liberating the music held in fire and ice – Götz Naleppa

The formal structure mirrored in the two pieces is the vessel into which the inventory of hot and cold sounds was poured. The aim here was to find a balance between influencing the sounds in compositional and acoustic terms, and leaving them in their original context – Andreas Bick

Fire and Frost Pattern was recorded for DEUTSCHLANDRADIO KULTUR. Audio CD and digital edition (stereo and surround sound) released by GRUENREKORDER (gruenrekorder.de).



Deutschlandradio Kultur

