

CASE STUDY

Sound Art
Jacob Kirkegaard

Denmark

Media Art

DeltaTron® Accelerometer, Power Supply

For Jacob Kirkegaard, an accomplished musician turned sound artist, the natural world is filled with music, hidden and unedited deep within the earth's surface or caught in the current of an urban waterway. Equipped with a Brüel & Kjær accelerometer on his latest project, Jacob was able to uncover and capture the raw harmonies of a rumbling volcano, spewing geysers and crackling ice to create organic symphonies.

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More Art than Science

The causes and effects of environmental sound have been explored for centuries with specific theories, mathematical equations, methods and instruments devised to gather, measure, analyse, explain and compensate for the sonic phenomena that surround us. While most commercial and industrial studies are focused on man-made noise sources and resolving their effects on the environment, Jacob Kirkegaard's investigations tend to be more art than science.

In his earliest work with natural elements, Jacob used a microphone to capture the sound of water dripping from his kitchen tap. Realising the natural rhythm and tonal beat hidden in a single water drop, he incorporated the recording samples into his compositions and played them at concerts and exhibitions. Today, he travels the world documenting hidden music in the environment and composing them into sound art.

A Sound Artist

Fig. 1
Jacob Kirkegaard



Jacob's career in sound exploration began with a musical instrument in his hand. He began studying the guitar from the age of 12, then later the cello where he ended his studies with an intense five year programme in classical cello under the expert guidance of renowned cellist Niels Erik Clausen. But it was a radio programme showcasing "concrete music", which truly captured his imagination. Inspired, he and a colleague researched and collected the sonic rhythm of Europe's cities, and exhibited these diverse urban sounds in a multimedia project between 1996 and 2001.

He has since been involved in a number of sound installations at various world institutes, museums and festivals; created performance pieces for the Danish Broadcasting Corporation; and, recorded an array of collaborative and solo music CDs. He is currently finishing his Masters at the Academy of Media Art in Cologne, Germany and teaching, concurrently, the archeology of sound at the Royal Academy of Fine Arts, School of Architecture in Copenhagen, Denmark.

Being part of the sound department at the Academy of Media Arts, he was introduced to accelerometers and hydrophones. That introduction opened a whole new world for him – from recording city noise with acoustical microphones to documenting the volatile pitches and drones of life's vibrations using an accelerometer attached to a bridge railing. "I am not especially interested in the technology behind the discoveries I make, but rather the possibilities the technology permits me," says Jacob. "Everywhere in the cosmos, there are such things as sound cells...if I can put my ear to their membrane, to the vibrating skin of such a cell, in order to record what is going on in there – then I am very happy¹⁾."

According to Jacob, sound membranes can be found wherever things melt and divide, such as the ice layers of a frozen lake, the fission centre of an atomic reactor, or the volatile landscape surrounding an active volcano. The accelerometer allows him to dive into the earth, go between layers and discover sounds known perhaps only to scientists, but which are normally hidden from everyday society. The natural tones and resonances that emerge, transforms what might normally be a basic scientific investigation, into an exploration in environmental art. As Jacob puts it, "I am creating sound art, with a scientific approach."

Diving in with a Brüel & Kjær Accelerometer

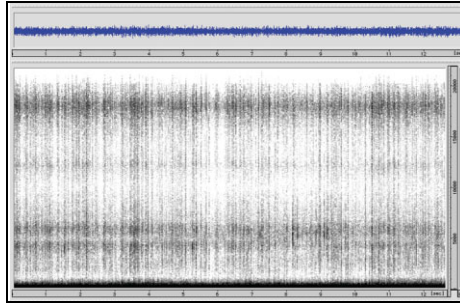
Fig. 2
DeltaTron
Accelerometer Type
4514-002 and
DeltaTron Power
Supply WB 1372



In his latest project, Jacob travelled to Iceland and stumbled across the sonically rich wastelands around Krisuvik, which bubble and explode with volcanic activity. Equipped with a general purpose DeltaTron[®] Accelerometer Type 4514-002 in his bag, Jacob mounted the accelerometer on a sharp-tipped probe and dived in to have a listen. With its titanium housing and unique design, Type 4514-002 provides high seismic resonance and ruggedness, and is capable of operating at extreme temperatures. Powered by DeltaTron Power Supply WB 1372, the accelerometer converted the geothermal vibrations to electronic signals as the earth heaved, constricted, bubbled and spewed, and Jacob recorded every rumble, rattle, murmur and roar transmitted through the accelerometer.

1)Excerpt from interview with Sarah Schulze, *Stadt Revue*, March 2005, Cologne, Germany.

Fig. 3
An earth spectrum



resolution allow the listener to journey into an underground world, which, for most of us, is beyond our reach.

“The earth has an incredibly interesting sound, because there is such a large spectrum in it, with the deep warm tones, high frequencies on top and a movement that gives associations to rhythm and music – it is ideal for playing at home or performing at concerts.” A statement that Jacob meant quite literally. In 2004, he released a music CD with recordings from the expedition. The unmanipulated sound tracks may not be what most people would consider dance music, but the pure sounds and high

Fig. 4 a) The accelerometer was mounted on a probe, which was inserted in the ground. **b)** Jacob on a sound excavation within the volcanic fields around Krisuvik, Iceland



Key Facts

- Brüel & Kjær’s precision instruments are generally used for technical applications, which in the right hands, can be interpreted into works of art
- Jacob Kirkegaard is a noted and respected musician and sound artist, known for his work with urban noise
- After his introduction to accelerometers and hydrophones at the Academy of Media Art (in Cologne, Germany), Jacob started focusing on hidden music found in resonant surfaces and layers
- In 2004, Jacob travelled to Iceland to capture the sub-sonic noise emitted by the electromagnetic waves of the Northern Lights, when he discovered the rich sounds of Iceland’s thermal springs and volcanic activity
- Using a Brüel & Kjær accelerometer mounted on a probe, he measured and recorded the seismic vibrations caused by all the underground activity. After listening carefully to the recordings, he noticed natural rhythms and tones produced by the earth’s movements
- Arranging the unmanipulated vibro-acoustic recordings in such a way, he was able to create sound art. The arrangement was released on CD and exhibited at various sound installations and concerts around the world
- For further information on Jacob Kirkegaard and his work, please go to <http://fonik.dk> or <http://secretsounds.dk>

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