

Semiconductor's *Magnetic Movie*: by Douglas Khan

In 1744 a simple experiment was conducted in Sweden to reproduce the underlying cause of the Aurora Borealis in a laboratory, what we would now think of as a room. A small hole in a shade “the size of a large pea” let through a ray of sunlight that then was refracted through a prism. The small patch of light broken into a spectrum of colours then traveled through a medium of turbulent air directly above a warmed glass of aquavit. The resulting image landed on a screen a few short feet away and looked like what was seen dancing in the sky on many long Swedish nights, nature’s sublime entertainment in the real pre-history of cinema.

The experiment concluded that the aurora was caused by a refraction of light through volatile vapors. Straining a rainbow through drunken air may have not proved to be most scientifically accurate recreation of the Aurora Borealis, but it was the “very most beautiful thing that can be arranged in a dark room...flashing beams shoot suddenly up and then transform into colored veils, endlessly changing position between themselves, the one against the other.” The shift in magnitude from the scale of the earth to a miniature in the laboratory was no doubt greased by the remaining aquavit left undedicated to the pursuit of science.

In *Magnetic Movie*, Semiconductor have taken the magnificent scientific visualisations of the sun and solar winds conducted at the Space Sciences Laboratory and Semiconducted them. Ruth Jarman and Joe Gerhardt of Semiconductor were artists-in-residence at SSL. Combining their in-house lab culture experience with formidable artistic instincts in sound, animation and programming, they have created a magnetic magnum opus *in nuce*, a *tour de force* of a massive invisible force brought down to human scale, and a “very most beautiful thing.”

Just as the finicky sun in Sweden was let through a small hole in the shade in 1744, scientists at the SSL at University of California in Berkeley theoretically model, conduct experiments, and develop instruments to study the magnetic fields of the sun. They study them deep inside the sun’s core, their effect on the looping of the corona flaring above its surface (the photosphere, that lights our days), and the solar winds of charged particles that interact with the earth’s own magnetic field, creating the auroral displays at the poles. *Magnetic Movie* is the aquavit, something not precisely scientific but grants us an uncanny experience of geophysical and cosmological forces.

With *Magnetic Movie*, Semiconductor have tapped into a new and ancient aesthetic of turbulence. We can hear it in the sounds of natural radio—naturally-occurring electromagnetic signals from the earth's ionosphere and magnetosphere—that course through *Magnetic Movie*, at times animating the animation, a quick nervous response condensed into static. The sound itself is the product of the combined turbulences of the earth's molten core, weather systems and electrical storms, ephemeral ionization in the upper atmosphere, and the solar winds. What we hear is underscored with complex and supple orders, in fact, too complex and supple to be ordered. We already have experience of them in the tangible turbulence of water and the crazy convection of fluids combining, tongues of fire and the thermal afterthought of smoke, the ribbons of clouds stiffly blown twisted up a hill. The flux championed by Hericlitus that has awed audiences since antiquity.