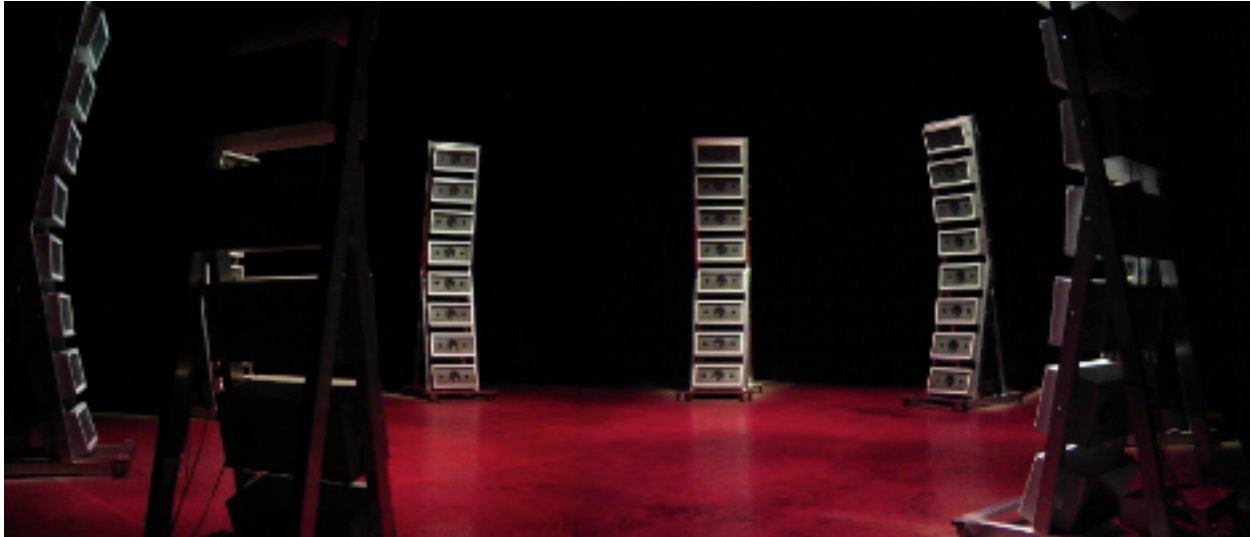


**The Turbulence Sound Matrix: Signe (2008)  
Steve Heimbecker / The Qube Assemblage  
Montréal, Canada**



The Turbulence Sound Matrix or TSM is a truly versatile and powerful 3200 watt RMS, 64 channel sound diffusion system which utilizes the real time wave pattern of the wind digitally recorded by Heimbecker's 64 channel wind sensor network, the Wind Array Cascade Machine (2003). The TSM uses 8 custom made, slightly concaved, free standing speaker columns that stand nearly 11 feet tall, 36 inches wide, and 42 inches deep. Each speaker column carries vertically, 8 discrete channels of sound through custom built speaker cabinets using 6.5 inch, 4 ohm, high power, full frequency coaxial speakers. Mounted at the base of each of the 8 speaker columns is a single Phoenix Gold / Rodin Audio, 12 channel ( 4 channels unused) power amplifier. These amplifiers are connected to the Mac G5 and Motu digital audio hardware with 100 foot Digiflex audio snakes and the Ebtech LLS-8 line leveller system. The length of the Digiflex cables allows great flexibility to adjust the installation diameter of the TSM.

The digital hardware of the TSM begins with a Mac G5 (2.3 dual with 8 gig or ram), using the Moto PCI 24 i/o system with a total of 72 i/o. The diffusion software operates with a 128 kbps minimum buffer size. Other sound production sources such as a second multi-channel DAW, or a live audio mixing console, can be implemented for both concert and interactive sound installation scenarios. The recorded wind data of the WACM, using Max MSP software, is the interface platform for the implementation of the layered sound diffusion matrix. This wind data is integrated in the diffusion software, controlling the range of the sound pressure levels dynamically at each speaker. This means that any sound input into the TSM system will be diffused through the 64 immersive channels of the TSM by the silent wave patterns of the wind, creating an example of what Heimbecker calls "wind space architecture".

In 2003, Steve Heimbecker began the construction of a 64 channel sound generation and diffusion system that uses the data produced by my Wind Array Cascade Machine (2003) or WACM. WACM is a 64 channel sensor network that captures, streams or records in amplitude dynamics, the wave patterns and movement of the wind across a horizontal surface. This system was inspired by the wave patterns of the wind seen in fields of tall grass or grain as the wind blows across them, and

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exists for Heimbecker as a metaphor for the vibrational sound wave or sine wave.

The TSM 64 channel speaker matrix is also unique other respects. It is reasonably portable, it is entirely artist owned and operated, it's software is custom made, and unlike many multi channel sound diffusion systems, the TSM can spatialize sound horizontally and vertically, meaning it moves sound in all directions as naturally as the wind.

For the 2008 world premiere of the TSM at Elektra, Montréal, and for installation presentations requiring continuous play for hours or weeks, the composition Signe 2008 was created by Heimbecker. Signe is created with 3 distinct layers of sound (wind generated sine waves, a 1946 Royal Quiet Deluxe typewriter, a grand piano), all augmented by the flowing wave patterns of the wind. Signe fully engages the sound potential of the Turbulence Sound Matrix, creating an audio art composition that is in constant motion, morphing itself through time and space at very high resolution, riding the waves of the air and the wind. Signe completely immerses us, creating a mesmerizing and completely hypnotic and immersive fabric of sound.

**Signe 2008**



Signe is an audio art composition created by Steve Heimbecker specifically for his Turbulence Sound Matrix (2008). Signe is created with 3 audible layers of sound (wind generated sine waves, a 1946 Royal Quiet Deluxe typewriter, a grand piano), all augmented by a 4th layer, the flowing wave patterns of the wind. Simple enough in conception, but unbelievably complex in reality. Signe fully engages the sonic potential of the Turbulence Sound Matrix, to create an audio art composition that is in constant motion, morphing itself through time and space at very high resolution – riding the waves of the air and the wind, completely immersing us in the 64 channel speaker array of the TSM, creating a mesmerizing and completely hypnotic fabric of sound that is in short, a completely new listening experience.

Steve Heimbecker, within the concept of sculpting sound, has been creating multi channel surround sound compositions for sound systems of his own making since the early 1990's. He has developed special field recording and production techniques to create densely woven fabrics of sound that transform time and space and completely immerse the listener.

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Heimbecker's multi channel compositions have typically been presented on the standard sound diffusion system technologies; 4 channel, 8 channel, and DVD 5.1 surround sound, until now. Heimbecker over a period of 5 years, has designed and created his most ambitious project ever, a 64 channel, 3200 watt sound system called the Turbulence Sound Matrix. In addition to the unique system hardware, the TSM implements specially designed software that uses 64 channel data recordings of wind patterns from the Wind Array Cascade Machine (2003) to diffuse any sound source through the TSM speaker array.

Signe is the first multi channel sound composition Steve Heimbecker has created for the Turbulence Sound Matrix. Signe is composed by weaving together 4 primary layers of sonic representation and diffusion, all of which are asymmetrically looped so that the composition will never repeat itself, continuously playing for hours or weeks if desired, and all affected by the flowing wave patterns of the wind. The first layer is sound is generated by the changing amplitude values of the wind data recordings. This data is converted in real time into 64 channels of variable sine waves moving between the mid and mid-low frequency range of the human ear. The next layer is nearly the same. Using a 2nd wind data recording, the generated sound from #1 is diffused through out the 64 channel TSM following the amplitude / air movements of the wind. The combination of 1 and 2 make the generated sine waves flow throughout the TSM system, literally riding the wind. Heimbecker has recorded 16 different times, the sound of a black, circa 1946, Royal Quiet Deluxe typewriter – the same typewriter that reportedly was a favorite of Ernest Hemingway's and many other writers. For each recording, Heimbecker types out a 9 to 10 minute story about the building of the Turbulence Sound Matrix. These stories are a combination of TSM project details, project successes, and frustrations, and too, some of Heimbecker's daydreams about the TSM. But these stories remain obscured, coded by the fact that the only documentation of each story is the sound of Heimbecker typing... nothing was actually written down on paper. These 16 "stories" are diffused throughout the TSM by a 3rd wind data recording. For the fourth layer, partly stemming from the inheritance of a family piano in 2007, Heimbecker has become fascinated by the sound of pianos. For Signe he has sampled and mapped all 88 notes of a grand piano he recorded in 2007 at the Art of Immersive Soundscape – University of Regina, to a 4th wind data recording. So here, as a new twist on the Aeolian Harp, it is the wind that "tickles the ivories" for the composition.

The only thing left to do now is to hear it, see it, and experience it!

Credits:

- The Turbulence Sound Matrix (2008) and the composition Signe (2008) were conceived, designed, and created by Steve Heimbecker, Montreal.
  
- Max MSP Programming: Etienne Grenier & Simon Laroche, Montreal.
  
- The TSM was produced with the assistance of the Media Art Sections of: Le Conseil des arts et des lettres du Québec, The Canada Council for the Arts, La fondation Daniel Langlois (Montreal), Videographe – Le Parc residency (Montreal), and the Qube Assemblage for Art in Motion (Montreal).