LEA
Leonardo Electronic Almanac
Vol **15** Issue **11– 12**

Joys of Travel: Introducing the Spectral Tourist

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Keywords

Acoustic instruments, gaming, gaming interface, sound, computer music

Abstract

With acoustic instruments, the transfer of human gesture into pitch and timbre involves resistance. It is during the struggle to produce and then control a sound that complex and interesting results emerge. Paradoxically, the general trend in computer-music interface design is towards transparency, flow and ease of use [1]. I developed the *Spectral Tourist* in 2003 to turn a cheap gaming interface into a sound-making tool that is resistant in performance; in other words, it is not easy to play.

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When the intentions of a musician meet with a body that resists them, friction between the two bodies causes sound to emerge. With a stringed instrument for example, it is the very fact of bow hair resisting a string that creates the sound. However, in computer-music interface design there is a general trend towards seamlessness, transparency and accessibility; this is at odds with analogue systems whose mechanics are fractured and opaque [1].

Through software such as Cycling 74's *Max MSP* [2], fader boxes, tracker-ball mice, graphics tablets, game controllers, wireless devices, motion tracking etc., offer potential to convert musical intention into sound. Joysticks, for example, are a ubiquitous, inexpensive and generally reliable piece of technology.

However, because of their origins in aircraft control and computer games, joysticks are easy to "play." There is nothing inside the hardware of most joysticks to curb a gesture. They can be pulled between extremes in milliseconds, while with a real world instrument such as a trumpet, extremes are very hard to reach and have to be found with care and practice. Therefore, grafting the joystick's physical extremes to the limits of software parameters can result in an unrewarding musical experience.

In the *Spectral Tourist,* a joystick is used as a tool for travelling rather than for gesture mapping and resistance is not created physically but sonically. This idea is borrowed directly from 3D computer

games where one is never in the same place for long and resistance is created between the virtual environment of the game and the narrative direction desired by the player. Pushing a joystick forwards with differing degrees of intensity means that one travels forward at different speeds whilst trying to avoid collision with boundaries and hazards. The *Spectral Tourist* is similar, although the landscape traversed is not one of electric fences and snipers but the hilly terrain of a spectrogram.

A performance with the *Spectral Tourist* involves taking a journey through a sequence of spectra stored within the computer's memory. The spectrograms can be generated from live input or from sound files stored on the computer.

The stored spectra preserve the timbral quality of their sources and sheets of spectral data are lined up so that the joystick can jump from sheet to sheet, morph from one sheet to another or smooth between sheets over time [Fig. 1].

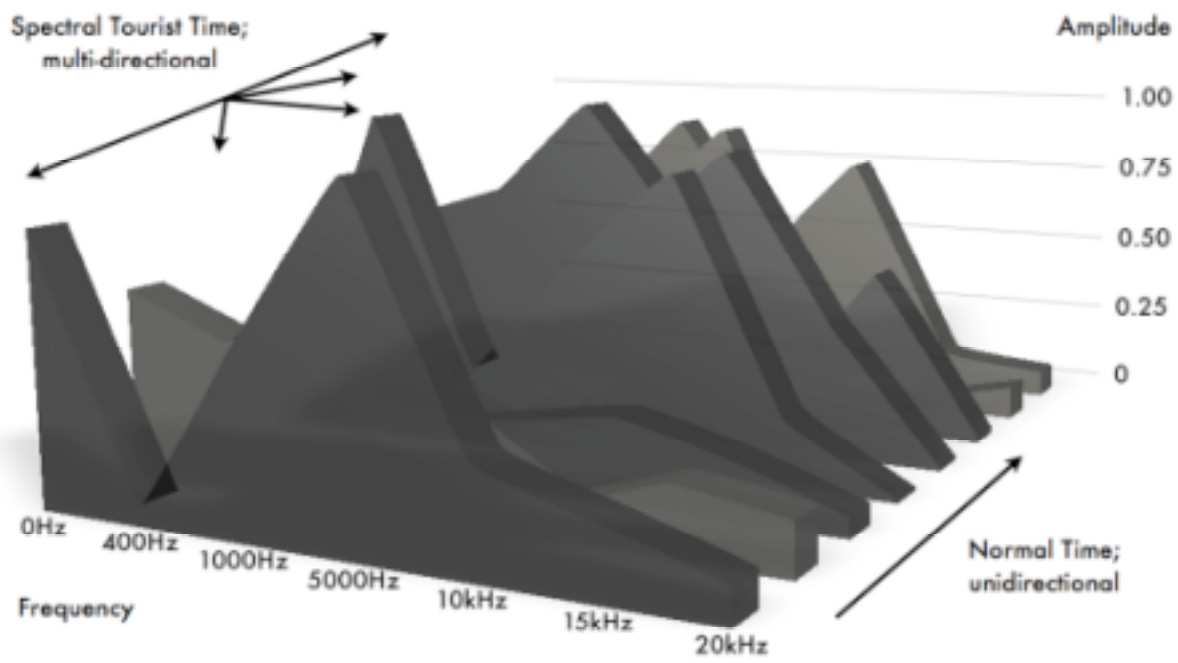

Figure 1. Sheets of spectral data are lined up in normal time.
The Spectral Tourist *can travel forwards and backwards and morph from sheet to sheet in multiple directions controlled by the joystick.*
It is easy to get lost and to take a wrong turn while navigating this space.

The spectral data is re-animated while you travel with anything from live signal to white noise to an FM synthesizer. Pink and white noise are broadband sound sources featuring most frequencies most of

the time. When these sounds are filtered by the spectrogram, the resulting sound is a close representation of the frequency content of the source. However, if the re-synthesis sound source is more pitched than noisy, the sonic output is a complex sum of the parts of the stored spectra that resonate with the impulse sound.

The *Spectral Tourist* is rewarding to perform with because it is difficult to play. It is quite possible to make sound that is badly designed or to overshoot into a new section of spectral data before it feels right to get there. This leads to a genuinely complex, improvised sonic structure and it is while breaking a sweat on stage that interesting sounds and forms are created.

My joystick of choice is a Gravis *Xterminator Dual Control* [Fig. 2] which can sit on my lap or a desk and requires two hands to steady it. This helps it to feel instrumental and under control: it also requires full concentration. The act of trying to find, hold and move to satisfying sound spaces helps to avoid some of the common issues of performance with computers. The audience can see a struggle to get the sound to come out right, they hear the computer resist and the traditional relationship between analogue sound and intention is referenced.

Figure 2. The Spectral Tourist *in action.*
The Gravis Xterminator Dual Control *requires two hands to control it properly, which is more involving in performance.*

Resources

Sounds from the *Spectral Tourist* are available online at http://www.tinpark.com
http://www.tinpark.com/audio/download/140/file.mp3

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Biographical Statement

Martin makes music, designs sound and creates interactive systems involving computers and live musicians. He studied composition at the University of Manchester and completed a Ph.D in Composition at the University of Edinburgh in 2003. He is Academic Director of the University of Edinburgh's MSc in Sound Design and Artistic Director of Edinburgh's Dialogues Festival; http://www.dialogues-festival.org. He performs widely as a soloist with laptop and is a member of concert remixing duo SNAIL. Some of his music is available on Ein Klang records; http://www.einklangrecords.com.

Citation reference for this Leonardo Electronic Almanac Essay

MLA Style
Parker, Martin. “Joys of travel: introducing the *Spectral Tourist.”* LEA Special Issue: My Favorite Supplement: The Joy of the Gizmo, Leonardo Electronic Almanac Vol. 15, No. 11-12 (2007). 31 Dec. 2007 <http://leoalmanac.org/journal/vol_15/lea_v15_n11-12/MParker.asp>.

APA Style
Parker, Martin. (Nov-Dec. 2007) “Joys of travel: introducing the *Spectral Tourist,”* LEA Special Issue: My Favorite Supplement: The Joy of the Gizmo, Leonardo Electronic Almanac Vol. 15, No. 11-12 (2007). Retrieved 31 Dec. 2007 from <http://leoalmanac.org/journal/vol_15/lea_v15_n11-12/MParker.asp>.