



## Sound Enhanced

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# Fernando Rocha: Performing with Computer-Based Electronics

BY KURT GARTNER

How are today's composers and percussionists using electronics to expand their timbral palettes and enhance their expressive capabilities? What are some of the performance issues encountered by percussionists who perform with fixed media (such as tape) or interactive media (such as computer)? Is it possible to perform electronics-based percussion compositions without hiring a technician? Fernando Rocha will address these and other questions in his PASIC clinic/performance.

In his session, Rocha will discuss the evolution of mixed works (i.e., compositions including percussion and electronic elements). In recent years, he has collaborated with composers and performed pieces in order to expand the percussionist's arsenal of tone colors—in a sense, an extension of the utility of found objects in percussion performance. Through the performance of two works in particular, Rocha will demonstrate the possibilities and performance issues of fixed and interactive

media compositions for percussion. Additionally, he will demonstrate the modification of acoustic percussion instruments through the use of triggering sensors and he will discuss the computer software that generates triggered sounds.

In 1994, University of California at Berkeley Professor Edmund Campion completed the work "Losing Touch" for vibraphone and electronic sounds. This work, like most tape-type pieces, is essentially a duo in which one performer (the percussionist) reacts and responds to the actions of the other performer (the tape). This approach leads to certain performance issues for the percussionist, such as balance, timbre, and especially synchronization.

Campion wanted to maximize the integration of the vibraphone and tape parts in both spatial and timbral senses. To achieve this, he created a click track (heard only by the performer) to assure the most accurate timing possible. Furthermore, he based many of the tape sounds on the spectral model of an acoustic vibraphone,

creating a "single sound universe" of percussion and tape (Example 1, mm. 57–74).

Applying real-time effects to the vibraphone during performance also extends the timbral range of the instrument. In this work, the percussionist sometimes plays the vibraphone at extreme ranges (with "extreme mallets") while adding a deep reverb effect to the vibraphone. This tone color, combined with the tape part, creates an "artificial, other-worldly effect" (Example 2, mm. 157–167). Through the design of the work, the percussionist can quickly transit from being a highly integrated component of the single sound universe to a pure soloist.

The use of computer-based sounds, such as those in Geof Holbrook's 2006 composition "Wooden Stars," allows greater performance flexibility for the percussionist. This award-winning piece was written for Rocha and calls upon the percussionist to trigger over 120 cues during its performance. By pressing pedals, the



## Example 1

performer initiates the computer playback of various audio files at specific points within the composition.

The performer-controlled triggering of these events is essential to this work, which is designed to emulate the sense

of erratic acceleration and deceleration through music. The technique of triggering the playback of sound files gives the player greater control in the pacing of the performance, while creating the illusion that "live electronics" are being produced.

In this passage, a sound is triggered as a güiro is scraped. The triggered sound sustains until the pedal is released—creating, in effect, a modified güiro sound (Example 3, mm. 36–43).

In addition to the performance issues



## Example 2

6 régler la reverbération du vibraphone et des sons électroniques au maximum  
*reverb up to maximum on both vibraphone and electronic sounds*  
*molto uniforme e delicato, come un gruppo di campane*

157 *ppp con pedale* *p* *Losing Touch - Edmond Campion*

161 *mp* *mf* *poco* *mf* *poco*

165 *mf* *p* *mf* *mf* *mf* *CD index 5 & 6* *ADAT locate 7* *CD index 9 : 06'32*  
*motour normal* *revenir au niveau de reverbération initial* *initial motor speed*  
*baguettes de vibraphone* *vibraphone sticks* *(senza pedale)*

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Example 3

associated with tape performance, computer-based pieces require some knowledge of software, the ability to control the initiation of sound files and loops, and the flexibility to adapt the sound system to the acoustics of the performance hall. Because the performer uses pedals to trigger events, the computer essentially “follows the performer,” creating greater freedom in performance. In fact, some pedal cues are scored simply for the performer to “inform the computer” of his or her current place in the performance, assuring that the audio files being triggered are remaining in sequence with the performer (Example 4, mm. 95–104).

During his session, Rocha will discuss Max/MSP, the software that he uses in “Wooden Stars” and other computer-based interactive works. Although the software is fairly simple to operate, the patches (sound files) it generates can become quite complex through the application of the many modifications the software provides.

Rocha will also discuss the Hyper-Kalimba, an instrument designed by Rocha and Joseph Malloch. The Hyper-Kalimba is a kalimba augmented by a piezo microphone and pressure sensors. Connected to Max/MSP, the instrument combines the acoustic properties of kalimba with virtually limitless electronic sounds.

Through Rocha’s work, the groundwork has been laid for more seamless interfaces between “man and machine.” Rather than creating obstacles, technology can and will provide opportunities for the augmentation of existing and the creation of completely new instruments.

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Example 4

94 **tempo primo**

wood *fp* *pp* *mf* *pp* *mf* *pp* *f* *p*

trig.  $\frac{4}{4}$   $\frac{7}{4}$

97 rit.  $\text{♩} = 200$  rit.  $\text{♩} = 120$

metal

wood *mf* 3 3 3

trig.  $\frac{7}{4}$   $\frac{3}{4}$   $\frac{5}{4}$

99 rit.  $\text{♩} = 104$  rit.  $\text{♩} = 84$   $\text{♩} = 40$

metal

wood 5 5 5 5 5

trig.  $\frac{5}{4}$

101 rit.  $\text{♩} = 200$   $\text{♩} = 40$

metal

wood

trig. *f* *mp*

104 fast 10" slow 15" extremely slow

wood *fp* *fp* *f*

trig.