

“La scuola illuminata”

Scuola Balliana – Nievo

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EGGS - Elementary Gestalts for Gesture Sonification Un sistema interattivo per la didattica musicale

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Enaction/embodiment are familiar experiences for musicians

Enaction consists in a perceptually guided action embedded in a specific biological, psychological and ethological/cultural context

- sensory-motor activity
- bodily experience
- perceiving by doing - doing by perceiving

“...enactive knowledge is constituted by the competence required by tasks such as typing,

driving a car,

dancing,

playing a musical instrument,

modelling objects from clay,

which would be difficult to describe in an iconic or symbolic form.”¹

¹ <https://www.enactivenetwork.org>

Enaction/embodiment are familiar experiences for musicians

- In particular this seems to be true in musical instrument practice
- In particular this seems (often) to be absent in computer music practice

Movement → Sound

- Throughout music history, traditional musical instruments have been the means of transforming the physical movements of a musician into musical sounds.
- Music as “sonification of gesture”
- Musical composition can be seen as an implicit process of organizing and directing physical human gestures on a musical instrument

Sound without movement

- Recorded media and loudspeakers (20th century)
- Electroacoustic music (1948)
- Computer music (60's)

"non-instrumental composition" breaking the link between physical human movement and music making.

- Murray Schafer: Schizophonia

The Hyper-Instrument (HI)^[1]

Movement (the body) is recovered

- A musical system made by a computer and some interface is called a Hyper-instrument
- Electronic **sensors and custom interfaces** can recreate the link between human gestures and music in the context of computer music

^[1] Tod Machover, www.media.mit.edu/hyperins/

HI: movement first

- Movement is no longer limited to the physical actions required to play traditional acoustic instruments. A whole **new range of musical gestures** can be imagined for HI's.
- Even more: The study of **gesture** can **forerun** the design of **the appropriate interface**.

HI's Limits

- HI's separate the input interfaces, sound generation and output interfaces
⇒ risk of developing **poor mapping** strategies
- **Break down of the perceptual linkage** between the physical action and the musical reaction
- Expressive information in music relies on **details** that are usually difficult to capture at the level of the performer's gestures

Live Electronics as HI

- Live-electronics: a traditional instrument played by a performer on the stage, expanded and transformed in real time by means of a computer.
- **Good compromise! Performance + technology, using **already existing** and widely- practiced “**interfaces**”.**

Live Electronics as HI

- It is the **physical performance**, not just the view of a performer by himself, what creates the engagement.
- The feeling and energy produced by the view of a performer who continuously controls the **creation of the music by means of refined and detailed movements is extremely engaging.**
- The view of someone who is making occasional changes to a pre-made music or casual variations to some real-time process is not.

Visual Sonic Enaction (VSE)

M. Goina and P. Polotti (2009)

- public interactive installation
- the visitor discovers and explores her/his own **gesture expressivity** through an audiovisual feedback representing her/his movements
- a sort of **interactive “mirror”**:
one can “watch” and “listen to” her/his own gesture

VSE

- VSE was firstly conceived as a sonic diversion in a video-art exhibition - www.catodica.it
- **in contrast to the passive experience (observer) of watching a video, VSE proposed an (en)active participation**

VSE

- Video

Graphic in VSE

- In VSE the same principle is applied to the **visual domain**. The goal is not painting. Rather, what appears on the wall/screen or the computer screen is a **visualization of the user's gestural expressiveness**.
- A **cross-modal** investigation was one of the goal: gesture as “translator” between visual and sonic modalities (to be done)

Sound in VSE

- in VSE, sound plays a fundamental role, despite the more evident visible act and visual effect of painting
- from an enactive point of view, sound provides an immediate and more embodied feedback than visual results
- while drawing, the user “**feels the sound in the joints**” and modifies the action consequently
- in this sense **sound** is the **pivot** element that connects altogether the **three components** of VSE

Sonic Walking (SW)

M. Goina and P. Polotti (2010-11)

- from an enactive point of view, sound provides an immediate and more **embodied feedback** than a visual representation (for example, a mirror)
- while walking, the user “feels the sound in the joints” and modifies the action consequently
- **sound is a representation of one’s posture and gait**

SW sound palette

Listen to your steps: water, earth, fire, air, underwater...

We told to the visitors that

- your steps will dabble
- your steps will rustle
- your steps will crackle
- your steps will blow
- your steps will go underwater

SW

- Videos

SW

- the focus is not only on gesture: a major concern is to enhance people perception of **ecological sounds**
- learn something about your body expressiveness by listening to sound **AND** learn something about sound by feeling your body movements

Elementary Gestalts for Gesture Sonification (EGGS)

- in the EGGS spirit, the performer/dancer does neither follow a musical piece, nor control the execution of a musical piece, nor generates any music by her/his movements
- she/he rather **listens to her/his gesture** and, **enactively, modifies** and controls her/his performing action according to the produced sound
- sound is a **representation** of her/his movement, a sonic consequence and a continuous feedback, in no way external to the gesture itself
- sound as enhancement of the performer's **proprioception**
- we do **not only watch a piece of coreography** but we **also "listen" to it.**

Swish 'n' Break

M. Goina and P. Polotti and S. Taylor (2010)

- Video

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<http://www.conservatorio.trieste.it>

<http://visualsonic.eu>