This report describes continuaMENTE, an interactive audiovisual piece composed for tape, texts, video, interactive percussion and live electronics. It was commissioned by the Itaú Cultural Foundation, São Paulo and created at the Interdisciplinary Nucleus for Sound Studies (NICS), Unicamp, Brazil. First performed on August 2007 in the exposition “Memória do Futuro” (Memory of the Future), continuaMENTE integrated several materials with real-time sounds and music’s gestures produced by three percussionists. The use of three interfaces: interactive mallets, gloves and a carpet, and the musicians’ actions generated complex sound textures on a MIDI controlled piano. This report describes the conceptual view, used resources, sonic strategies and graphic notation, and the performance rules related to this work.

1. INTRODUCTION

continuaMENTE, composed as an interactive piece to integrate multimedia resources, was a challenge. It required equilibrium between several sources of information and the control of different devices and technology. It brings the compositional design to an interdisciplinary framework that inter-relates electroacoustics, mediated performance, improvisation, audiovisual and the development of new interfaces. In line with this idea, continuaMENTE explored the relationship between percussion, audiovisual, interfaces and percussion, as presented in [2]: as material we used percussion instruments and audiovisual such as; interactive mallets, carpet, gloves and laptop as interfaces; we also had three percussionists as agents. continuaMENTE structuring elements are the sound diffusion system, video and light effects, the spatial distribution of instruments and performers on the stage, three new interfaces and performers’ gestures. The interpreters bodies were taken as musical instruments and their tactile exploration with interfaces on different percussion setups (distributed all over the stage) created new sounds in real time. Specific body regions and movements produced by each interpreter were required by the composer to guide improvisation described on the graphic scores. During the performance, tactile explorations were possible when the musicians wore piezoelectric sensor gloves. These interfaces acted as gesture close-up or zoom. Gesture details were amplified and sent to a computer that in turn played a MIDI-controlled piano. This performance system integrated audiovisual material and provided a support for reinterpretation and meaning reassignment.

In the next paragraphs, the first section describes continuaMENTE’s conceptual view point followed by the description of the main compositional resources: texts, video projections, percussion instrumentation, three gesture interfaces and Pure data (Pd) patches used for real time gesture control of a MIDI-controlled piano. Further, mediation and improvisation are also discussed to elucidate the performers rule in the development of the piece. We will show graphic scores, stage map describing instrument setup and performers movements, visual poems and other elements of the piece’s scenario.

2. CONCEPTUAL PERSPECTIVE

Conceptually, continuaMENTE is related to the author’s point of view that a self-organized process can be a paradigm for compositional systems [1]. Materials and agents develop relations in the System and in turn those agents modify, integrate and develop new organizations or structures within a performance situation. For instance, the composer himself is a system agent whether in the electronic studio or on the stage. He is the first listener of the piece’s emergent organization.

The idea behind this piece is also in line with the author’s recent research perspective where improvisation and multimodality are taken as a way to develop a process of musical meaning within an interactive performance [2] (we have studied a point of view in which musical meaning is taken as a process [3]).

In continuaMENTE the idea starts upon the observation that in most of live electroacoustic pieces, the performers rules are mainly to articulate well-defined and familiar music structures. On the other hand, interactive audiovisual performances have other peculiarities such as the explicit multi-sensorial stimuli. Composers and performers offers not only structured sounds but also structured audiovisuals among other stimuli, which engage the audience into a multi-sensorial experience. The meaningful potentialities of this kind of performance are distributed into several perceptive domains of the human brain, and the audience has to deal with new set of stimulus and to integrate them into meaningful relations (idea further discussed in [3]). In this sense, performers may furnish elements to facilitate the multi-
sensorial integration, creating a potential meaningful whole. This idea of constant (re)furnishing of music thoughts is the main concept that articulates sounds, images and texts on continuaMENTE. The name of the piece in Portuguese suggests: “continua” (continuous), “mente” (mind). Figure 1 shows the first page of the visual poem “Hipótese do Continuum” (continuum hypothesis) that was created in line with the piece concept. Located in seven different positions on the stage, this poem presented visual structures describing interaction between words and visual patterns. The poem itself was used as a scenario and it was the first medium integrating concepts, audiovisuals and performance rules. The text of the poem is divided in four narrative sketches. Each sketch described a different sequence of events and facts of a single person’s quotidiant. These sketches were interpreted by an actor that created a different character for each sketch. The recorded text was mixed with electroacoustic sounds and they were played at the beginning and at the end of the piece.

Figure 1: Two pages of the visual poem “Hipótese do Continuum” spotted with black light in the back stage scenario (see figure 2). It was the basic support for sonic, light and visual interplay.

### 3. RESOURCES

continuaMENTE is divided in eight scenes composed using different sound materials - from environmental to digital synthetic sounds. The performers used improvisation, music gestures and technology to integrate texts, images, tape and live electronics. Video projections combined real time images with pre-recorded sequences. The instrumentation included: ton-tons, Spanish cajon, Brazilian pandeiro, congas, bongos, and marimba. Percussionists played them using sticks, mallets and interactive piezzo-electric mallets whose actions produced two kinds of music signals: a) amplified percussion sounds and b) MIDI data stream. The first one was sent to a mixing desk without any further signal processing. The MIDI data was processed in a laptop to play a MIDI controlled piano. Figure 2 shows two interfaces developed at NICS and used in the performance.

Figure 2: An overall view of the stage during the performance continuaMENTE. It is possible to see the interactive carpet and the interactive mallets played on the stage floor.

continuaMENTE’s sonorities resemble a percussion piece accompanied by a piano, both instruments sounding over a pre-composed soundscape (figure 3). This piece explores the identity of Brazilian percussion instruments amplifying their sound features. Idiomatic percussion gestures played by the percussionists using interfaces produced complex melodic patterns on the MIDI piano, via real time computer control. Original sound morphologies were preserved while the performers gestures constantly produced new materials and the rhythmic structures were repeated generating complex patterns on the MIDI piano (figure 4).

Figure 3: It shows Video projection, percussionist, visual poems and the laptop controlling table.

Three pieces of software were created to control and integrate the performer’s gestures to the automatic piano interpretation. The first one Rabisco is an interactive music drawing interface written in Java (see [http://www.nics.unicamp.br/~ichizo/rabisco](http://www.nics.unicamp.br/~ichizo/rabisco)).
The other two programs Ciclotom and Harmonostinati were implemented in Pure Data. The first one generates a massive structure of pitch cycles with varying speed from slow motion to a very fast sequence of MIDI events. Piano sounds controlled by Ciclotom generated machine-oriented note sequences whose dizzying speeds were far beyond human capacity. Harmonostinati takes the strokes from the interactive mallets or gloves and map them into a harmonic field that varies according to the speed of the interpreter, mallet index or gloves fingers (Figure 5).

**Figure 4.** Percussionist is using interactive mallets to play the MIDI controlled piano.

**Figure 5.** (top) Graphic interface of Harmonostinati. (bottom) Pd patch of one voice layer.

**Figure 6.** Stage map showing the performers movements during the first section part of the piece.

**Figure 7.** Graphic score notating body percussion and integration between three performers (top). Notation for improvisation based on scenic gestures (bottom).

Music notation used in continuaMENTE combined a set of different approaches: from traditional percussion notation to graphic scores that described movements, body percussion and guides for improvisation based on scenic gestures. Graphic scores were used to mediate new interactions between interpreters and the composer who also interacting on stage during the performance (Figure 8, top). The audience experienced the integration of four supporting media: soundtrack on tape, a pre-recorded video sequences, and lighting and real time images. Figure 8 (bottom) shows a complex

**4. PERFORMANCE**

The total duration of the eight sections of continuaMENTE was 60 minutes. Each section explored different sound realms. During the performance there were moments in which mediated body percussion playd the piano; in others, audiovisual and piano developed a duo together. Overall, the music discourse was based on three different perspectives: a) the stage was used as a large music spatial instrument (Figure 6), b) body percussion and interfaces were used as a way of expanding sound material and recreating music structures, c) changes in light color and music gestures played in darkness with fluorescent sticks produced light trajectories amplifying the visual perception of musical gestures.
continuaMENTE is a work where the composer proposed an articulation of new performance elements in line with live electronics and audiovisuals. From the composer’s perspective, this piece is a composition-system in which the physical space, light colors, sounds and images are integrated in a broad notion of musical instrument. Music interpretation becomes re-creating and not merely reproducing the piece. continuaMENTE enables a broader exploration of the countless possibilities that correlate sounds, visual material and texts.

This piece is also related with the author’s latest work in collaboration with the SPECS Group from the Audiovisual Institute (IUA) of Pompeu Fabra University, in Barcelona. In a previous work called “Ada: intelligent space”, the author explored the interaction between synthetic emotions and live soundscapes [4] and in the recent development of an interactive mixed reality performance called re(PER)curso [5] (see also www.iua.upf.edu/repercurso).

5. CONCLUSION

continuaMENTE seeks for a syncretism among medias, interactivity and performance gestures. The composer worked with trials of significance built through mixtures and superimposition of sound densities that intertwine with complex rhythmic patterns. Sound from streets, environmental noises and texts were assembled together, allocated in eight scenes. It invites listeners to perceive multiple sonorities fulfilling every-day reality: secrets immersed within environmental noises created by travelers’ murmurs. Elusive sound passages from the neighborhood that many times we heard without knowing, or that by knowing it, we don’t allow ourselves to actually hear them.

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7. REFERENCES


