FROM CONCEPT TO SOUND: TRANSFORMATION THROUGH LIVE INTERACTIVE COMPOSITION

DOMINANTE DE LA JOURNEE (KEYNOTE) - 1

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No one knows exactly what went through the mind of pre-historic man when he first struck two rough stones together in order to produce sounds and rhythms. To what extent did the resulting reverberations captivate him? To what extent was he already projecting his own ideas in order to transform what he was doing? As the millenniums passed, he continued polishing his stones, producing more and more sophisticated instruments. In the era of digital sound generation, real time interactions and virtually unbounded possibilities, the computer has become our new stone with which we project and transform our ideas into sounds.

Music composition has evolved from symbolic notated pitches to expressions of the internal organization of sound. This can be observed in the extended instrumental techniques developed from the 1940's onwards up to the more recent compositional strategies that have emerged from the "new interfaces for musical expression". The dynamic organization of sound material in "real" time, however, adds new dimensions to musical information and to its symbolic representations.

This talk will explore the convergence between ideas developed as a result of live interactive composition and ideas that have emerged in an interdisciplinary framework involving mathematical modeling, computer and data processing and models for real time interaction. We will introduce the interdisciplinary research activities developed at NICS/Unicamp Brazil, and will discuss a conceptual view point anchored in the development of systems that produce sound material in real time, through the iteration of simple rules and independent of symbolic notation.

With the advent of new technologies that have emphasized interaction and novel music interfaces, alternative forms and modes of interactive media have been realized. These developments raise fundamental questions regarding the role of embodiment as well as the environment and interaction in live interactive composition focusing on our understanding of the man-machine interplay. In addition, it emphasizes a more situated and externalist view.

The study that we are developing at NICS is to integrate algorithmic composition and interactive narratives with scientific sonification and visualization. It is possible to conceive new methods of combining music interface technologies within a theoretical approach driven towards shaping human sensory experiences through new forms of enhanced perception and action through interplay with music performance. For example, new interactive technologies such as interactive environments can function as a laboratory setting where we can test computational models and interactive musical behavior. Aligned with this perspective, we are working with multimodal

interaction, interactive installations and audiovisual works to combine multimodalities using interactive media in order to produce immersion, based on the concept of Presence.

The structural foundation of this endeavor is not a written score or textual narrative, but rather the concept of recursion used as a way of constructing musical meaning, or, more specifically, the interaction between human agents and machines that produced recurring changes in the physical world. Our aim is to experience the ways in which internal and external representations of the world can be joined together in a performance to create sound and video.

These experiences raise a fundamental question: Is a universal, even basic, structure underlying human auditory and visual experiences that is based on a single cognitive function in the brain, as opposed to one that is fragmented along a number of modality-specific properties? This invariant function could be equated with the brain's drive to find meaning in events organized in time, or to define a narrative structure for multimodal experiences to which it is exposed.

To illustrate our research trajectory, we will present a number of musical systems and works develop at NICS that have emerged from the concepts expressed during this lecture. In short, these works illustrate that the aesthetic experience can be at least partially obtained from the emergence of structures produced as a result of the interaction between humans and interactive systems.