

# Michelangelo Lupone

## Interactive, Adaptive, Evolutive

Music can transform the perception of space and time, recall to mind places and forms, stimulate the listener's imagination to create abstract models.

These characteristics have a fundamental importance in the conception of musical works which have modes of active fruition, which foresee an interaction with the listener or an itinerary, a modification of the sound attributes in terms of the environment or an arbitrary choice of the position and conditions of listening.

As with traditional works of music, listening in a participating and conscious way signifies following the logical and coherent flow of connection between the sounds, but in this case however the sensorial stimulus spreads, since the sound is associated with tactile and visual experiences in a functional way; generally speaking, the work is enjoyed as a dynamic process of emotional apprehension in which the listener participates deliberately and for which he is partially responsible.

As a musical work, the Art Sound Installation evidences the above-mentioned innovative characteristics of fruition more than any other. The synergy which can be established with the listener, with the environment and the architecture, with the materials and the sculptural forms, with the passage of time and events, gives the public a correlated plurality of experiences which sharpens responsiveness to the artistic and expressive gesture and stimulates cognition.

### **Works of Art and Technology**

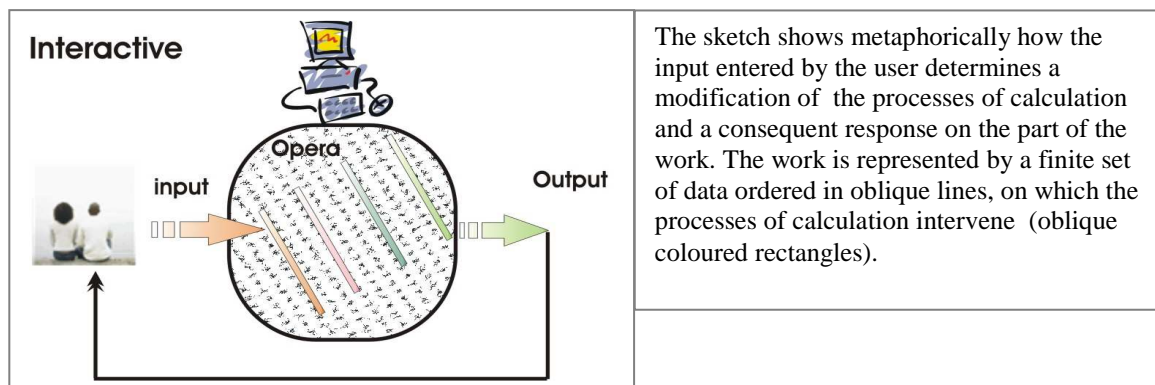
The constitutive elements of the Sound Art Installations developed at CRM, Rome include analogic and digital technologies: the first are dedicated in general to the diffusion of sound, to vibration, to the physical behaviour of the materials, to the recording of human and environmental input data; the second to production, control and acquisition of the sounds, to the management of *interactivity* and of the *adaptive and evolutive processes* of the work.

The aspects which require the use of digital technologies have been the object of extremely extensive research involving various branches of expertise, both artistic and scientific; I will subsequently give a concise description of the conceptual elements which define these operational limits.

By *interactivity* I refer to the man-machine relationship and, in particular, to the features permitting the input of data by the user. *Interactivity* can be defined as the characteristic of a system whose behaviour is not fixed but varies with the diversity of the user's input. When a user inputs information to the system, he "interacts" with it and, following this interaction, the system is able to alter its prefixed behaviour and adapt itself to the new request.

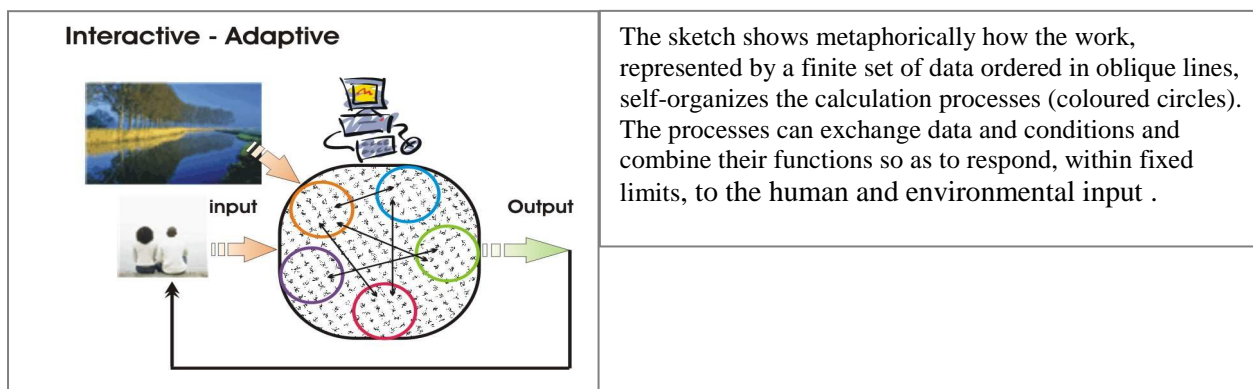
The term "interactive" is normally used to identify this system which responds deterministically to the action of the user. The most typical example of the interactive system is the computer, which is fitted with programmes that permit the user to enter commands and to receive predictable responses.

In the case of an interactive work, the user is faced by a predefined simple or complex organism. The responses which he can receive, or the processes which he can activate, are the consequence of actions effected by himself. The user is free to choose the sequence of the actions to be realized, he can follow his own logical and intuitive path for operating creatively within a vast but finite set of possibilities.



The term *adaptive* identifies a system which is “self-organizing” in relation to both the actions of the user and the conditions of the surrounding environment. An *adaptive* work receives and/or detects the impulses arriving from outside and modifies its condition and its responses in an unpredictable or “partly” predictable way. The user receives responses which take into account not only his current action, but also the sequence of his previous actions and of the whole environmental context. The system is to some extent able to “learn” and to “adapt itself” to the requirements of the conditions around it. Typically, in these works, the user is free to choose the sequence of actions to realize but the results are irrepeatable, in the sense that an identical command executed at different times is not followed by an identical result.

This is the case with works like “**Trio plastico**”, “**In coro**” and “**Volumi adattivi**”, where the music is “self-organized” on the basis of the combination and speed of the actions of the public, of the sounds present in the environment, of the proximity of objects or bodies, of the position and pressure of the mobile sculptured parts (sensitive plates).



The term *evolutive* identifies a system capable of self-regulation, of creating and/or modifying its calculation processes, of memorizing and processing the preceding states and of changing its behaviour in relation to the user’s input, to an input from the environment and to the passage of time.

Such a work can be compared to a simple primitive live organism, destined – like every living being – to a limited temporal cycle, if that is desired by its authors.

It is an undertaking of considerable artistic and scientific design complexity, since a work with high “aperture” characteristics is more exposed to loss of its identity and of the style referring to its author, as well as a drift of self-analysis processes. .

At the present moment this is the research of major commitment for the CRM. A prototype permanent Art Sound Installation, *Sorgenti nascoste* (Lupone/Paladino), has been realized with these characteristics, while other projects are in course of realization for a permanent installation at the archeological excavations of Pompei (Lupone/Bianchini/Terzi), Belgrade (Lupone/Galizia/Djukanovic/Terzi) and L’Aquila (Lupone/Galizia).

