GRAMMA: the new music in an old architecture

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Abstract

GRAMMA Institute was established in 1989 with the restoration of the baroque church of St. Caterina d’Alessandria, located in historical center of L’Aquila, in order to promote contemporary music, making use of the most advanced technologies. The scientific and musical staff working at GRAMMA Institute have conceived and realized some events where they tried to experiment new forms of performances in connection with a dual research, concerning listening and viewing.

The presence of a not traditional instrumentation, somehow connected to the imaginary and fantastic, has characterized the Institute’s activity, from the beginning orientated to the realization of a project titled CORPI DEL SUONO (Bodies of Sound). This project, based on a festival and an exhibition of very special instruments, proposed the most complex aspects in the scientific and musical researches in a spectacular way, in order to simplify the understanding of them and, at the same time, verify the result in the audience about an aesthetic intervention.

The scientific research, lead in the electroacoustic field, is necessarily linked with the expressive research of the artists. The first one finds incentives, tests and legitimations in the second one. In our center, like in many others, composers, interpreters, visual artists on one hand, scientists on the other hand, work in close contact. We are sure of the validity of this way and the whole activity of GRAMMA Institute is addressed to this aim and to the consequent idea of an open-center, living and enriching of several contributes.

In the following article we want to illustrate the different fields in the research and production by means the GRAMMA Institute carries on its own activity.

1. Introduction

GRAMMA Institute, founded inside an eighteenth century church, not more used for the worship, has carried out laboratories and music production studies capable to work on sound at the maximum level: from numerical synthesis to analysis and processing in real and deferred time. The high technologies and the abilities put at disposal of the guests, both composers and interpreters, have permitted to produce works and performances of high aesthetic and technical task.

Nowadays, GRAMMA Institute have an important technological patrimony dedicated to the research and to the multimedia production, and it avail of a scientific and artistic staff formed of Teachers of Universities and Conservatories.

The activities are articulated in four main ways:

- **Diffusion**
  (concerts, meetings, publications).
- **Research**
  (software and hardware developed for the contemporary artistic language)
- **Production**
  (design and realization of musical works of high artistic value);
- **Didactics**
  (courses, seminars of specialization and of training, taked place at the GRAMMA Institute and at Italian and foreign Universities and Conservatories).

2. Substantial relation: music and technology

In every edition of CORPI DEL SUONO we have shown a study of the fundamental work themes of GRAMMA Institute: the use of advanced technologies both for composition and concert performance and the interpretation of contemporary music. Both the themes are strongly connected and many contemporary works require a qualified approach, both from the organization and from the audience, so that each part of the artistic message finds coherent communicative mediation.

Just from the point of view of the organization, the first problem we must have faced and settled, was to adapt the acoustic-scenic features of the place where the event takes place to the needs of the musical works in program. We make use of sophisticated systems of hearing, based on many loudspeakers, of the placement of interpreters in the best points of the theatrical space and of the building of
variegated, visual environments; this technique has permitted us to support image with sound through coherent criteria according to the expressive will of the musical work.

The versatile space of St. Caterina d’Alessandria has proved itself as precious for this kind of events (Photo 1).

![Photo 1 St. Caterina d’Alessandria Church Arpa Eolica - Corpi del Suono 1990](image)

The whole work by GRAMMA Institute is strongly linked with the idea of experiment, one of the essential starting-points also for musical creation, with the involvement of traditional interpreters, who have become, thanks to the technological development, the guided authors of processing in real time.

We have lived at GRAMMA Institute what, for some time, was discussed in the most important meetings on the evolution of electroacoustic Music: the birth of new professionals.

Two fundamental and connected phases are included in the musical production: both the creative and the executive phase. For the composer nowadays, this means that the creative phase is constantly accompanied by an experienced person able to add the musical knowledge to the scientific ones.

2. Performance

In the different editions of the event CORPI DEL SUONO, a more developing trend of experimenting the new spectacular forms of the event-concert has grown up contemporary to a program, so to say, more regular, based on the proposal of mainly electroacoustic, historical or contemporary works. In these events GRAMMA Institute defines its artistic activity through the whole human technical sorts. The main part of these events are idealized and produced by GRAMMA Institute.

They based themselves on the use of new technologies in support of the spectacular performance that the composers and the other artists each time require. The research today, more than in the past, is a basic step for the activity of the production centers in the field of Electroacoustic Music; it is more and more aimed at the production of works and the carrying out of projects taking on account, since their idealization, the fundamental questions concerning musical events in the round. We begin from the thoughts on the audience, the matters of hearing psychology, the problems of the new music perception, till the considerations on the acoustic and the architectural space where music is purposed.

In order to extend the reading levels and deep the hearing of the purposed works in the various editions of CORPI DEL SUONO, we have developed a theme for each concert and studied an environment in unusual places, cutting the space in several parts, through panels, lights and projections. The fascinating but hard hypothesis is to carry out concerts where the audience would have the possibility to move without losing the information coming from the performance, amplifying the perceptive experience as regards sounds and performed music.

We have carried out the concert “distributed form”, that is to say, thought to be listened continually in all places guesting the concert.

The audience could follow a sort of free route, where several equipped stations with texts and projections, have permitted to follow the development of the concert.

Our inventions are addressed to the multiple sonority of the environments and to their acoustic specialization. In this way, we have exalted the specific resonance of places so that the musical work, spread contemporary in the whole environment, could be appreciated from the audience according to different hearing formalities. The reverberations coming from each room characterized by architectural geometries of stairs, ceilings, stone and marble walls, have been handled with many loud-speaker systems, of different size and power, placed so as to permit that the audience could appreciate the variations of the same work in different acoustic spaces.

3. Music applied research

The high professional level audio technologies have made possible the experimentation, for years, on sophisticated techniques of recording, spatialization and audio installations.

The team of our researchers is now able to supply the musical productions with both technological and theoretical relevant resources giving the musi-
cian a way for new and deeper electroacoustical experiences.

The our group have gained a considerable algorithmically experience on real time digital signal processing with use of the sophisticated informatic systems available at the Institute. These systems are designated to process the musical signal at any level and are completely programmable. This great flexibility allow the composer to redirect the algorithmically research to his own needs.

Every collaborator of GRAMMA Institute is able to develop programs oriented to each individual composer, because of his familiarity with many informatical languages and software systems.

In the last years the researches of the GRAMMA Institute have gathered on the study of the problematic concerned with the space.

Particularly the two halls giving hospitality to the concerts present a high reverberation field with very different shares of reflection and diffraction, due to the materials type of the walls, the ceilings and the flooring. The architectures of the environments put in evidence strongly some ways of resonance capable to compromise the intelligibility and the timbric propriety of the sources. In the two places, there was a perceptive impossibility of emphasizing the sound sources when these were placed at a more than seven meters distance from the hearing point. This particular problem has been studied by the staff of GRAMMA Institute and solved by using two sound installations. The two installations present distinctive features of control and compensation of the environment: the first one (Wave Guides - Photo 2), realized inside the church of St. Caterina d’Alessandria, is based on the concept of wave guide and uses a complex tubular pipe inside which the sound signal is spread and is addressed; the pipes’ lengths, with proper modifications, have been made coherent to the phase emissions and to the wave lengths which permit the recognition of four distinct sound sources.

This installation has been ideated for the performance of tape music, stereophonic and quadraphonic works.

The second installation (Reflecting Screens - Photo 3), realized inside the North Bastion of the Spanish Fortress, uses four small loudspeakers, properly designed with an irradiation angle of about 50°, on which, swinging Reflecting Screens have been placed with the function of conveying and check the energetic contribute of the first sound reflections.

This installation has been ideated for the performance of works for instruments, tape and live electronics.

3. Didactic

The need to form new professional figures has conducted us to the ideation of various didactic projects each oriented to the interaction between musical and scientific appearances.

The project “Starting to the comprehension and divuligation of the musical” realization through shows, meetings and concerts in the years “89-90-91” has been the objective of:

- Show like way of information, meetings, drove listening.
- History of the music through the history of the instruments and of sonorous luteria.
- Correlation between musical language, interpretative techniques and physics of the instruments.

The project “Formation the job and specialization” realized with La Terra Fertile in the years “94-96-98” (Photo 4) where:

- The teachers and the students from Conservatories compare their pedagogical experiences;
- The working world of the Centers of research and Musical Production comes in contact with the youth reality of the sector;
The industries of musical instruments presents the state of the art of the technology;
- Publications of pedagogical jobs are realized;
- The coordination of the didactic of the Electronic Music in Italian Conservatories happens.

With the biennial event La Terra Fertile, we have planned and carried out a Symposium devoted both to the training of young musicians and to the professional specialization in informatics applied to music: composition, interpretation and performance, sonorous restoration.

![Photo 4 La Terra Fertile 1996](image)

Electroacoustic Music teachers meeting

The conference based on the presentation and the debate around the didactic works gave evidence to the strong coincidence of the intents and the methodology among the different schools. This means that the cultural patrimony that the Electronic music has produced until today, could find a coherent institutional affirmation in Italy and spread, through the school in a more capillary way, the idiom and the meanings of the scientific-musical research that characterizes this discipline.

The project “Pedagogy and Performance” realized with a series of ways from Laboratories to the in the years ’95-’96-’98” has been the objective:
- Use of the technologies for creative and spectacular purposes;
- Development of methods of comparative job between the different arts;
- Formation of multidiscipline staff for the ideation and realization of multimedia performances.

4. Communication

The constant test and the exchange of ideas inside the work-group of GRAMMA Institute has permitted to face another aspect of music spreading (particularly contemporary music) not connected to the hall where the concert takes place.

If someone is interested in hearing the purposed works in the different performances of CORPI DEL SUONO, could connect with an Internet site and listen in real time the concert or part of it. The idea is to purpose, through the hearing in net, a virtual image of what is happening where the concert take place. As regards the technical point of view it was simple: it was sufficient to be connected by a modem and use the Real Audio software. More complex was the work that GRAMMA Institute has produced in order to permit the transmitted sound not to loose its original brightness.

We have carried out an algorithm, capable to codify the signal without losses.

The selected technology for the implementation of the initiative is based on the encoders and on Progressive Network Real Audio and Real Video server.

References