The International Digital ElectroAcoustic Music Archive -
A new source for research into the history of electroacoustic music

Thomas Gerwin
Zentrum für Kunst und Medientechnologie
Ritterstraße 42, D-76137 Karlsruhe, Germany
e-mail: tg@zkm.de

Abstract
This paper describes the developments of the construction of the IDEAMA project especially in Europe. Its international collaborations, the contents and the scientific and aesthetical possibilities this collection enables. For the first time, electroacoustic music from the inception of the medium up to present days is collected worldwide and brought together at one place. At the current state, we are trying to complete the so-called IDEAMA target collection, which includes the internationally most important electroacoustic works up to 1970.

1. Introduction
The survival of important works of electroacoustic music is threatened by the deterioration of the materials and equipment used to create, play and store them. The International Digital ElectroAcoustic Music Archive (IDEAMA) is dedicated to collecting, preserving and disseminating this repertoire. IDEAMA, founded in 1990, is a collaborative effort between Zentrum für Kunst und Medientechnologie (ZKM) and Stanford University's Center for Computer Research in Music and Acoustics (CCRMA).

An initial target collection of electroacoustic works and auxiliary materials of the early days, accompanied by a database catalogue, will be established within three years and transmitted to the affiliated institutions. Supplements will then complete the collection step-by-step, up to the most recent compositions.

As a "paperless" archive, IDEAMA will store all materials entirely in digital form. Recordings, scores, and other auxiliary materials will be digitized and returned to their owners. The IDEAMA collection will be publicly accessible in compliance with the rights of the owners at the Founding Partner and other Affiliate Institutions.

2. Zentrum für Kunst und Medientechnologie
The Center for Art and Media Technology (ZKM), the European IDEAMA Founding Institution, brings the arts and new forms of media together in theory as well as in practice. ZKM aims at fostering the creative possibilities of a connection between traditional forms of art and new media technology, to achieve results which anticipate future.

The goal is to enrich the arts, not to imitate them technologically. In this vein, the great potential in traditional kinds of art and those of media arts must be measured together. Both of these areas, individually and in collaboration, will be promoted and supported in ZKM.

The core of ZKM is found in the computer laboratories at Institute for Music and Acoustics and at Institute for Image Media. These are the places for experimentation and research, where artists and scholars have the necessary equipment at their disposal to apply new technology to aesthetic practice. The Media Museum is closely linked to the studios. Here the public will be presented with the history of media and the potentials for different kinds of media by means of exemplary models and exhibits. The Media Museum provides the transition then to the Museum of Contemporary Arts which collects examples of new media art along with classic genres. The libraries for video, audio and slices, ZKM's Mediathek, as well as art and media libraries are all open to the public. These collections serve additionally as archives, not only for media produced at ZKM, but also as a comprehensive documentation of video art and contemporary and electroacoustic music. IDEAMA is one important part of the Mediathek of ZKM.

ZKM is closely linked with "School of Design" (HfG) where, since 1992, product design, graphic design, scenography and media arts are taught practically and theoretically as well as in art, philosophy, and aesthetic of media.

3. Partner Institutions
Partner Institutions of IDEAMA have contributed significantly to the history of electroacoustic music and own collections and studios. The Partner Institutions are contributing in amount of music to the target collection.

The following institutions are collaborating with IDEAMA as Partner Institutions: Groupe de Recherches Musicales (GMRM), Paris established 1944 as "Studio dédié aux à l'expérience radiophonique" à la Radiodiffusion française by Pierre Schaeffer, now headed by Francois Bayle; Works: 735; Institut de Recherche et de Coordination Musique / Acoustique
4. The target collection

An international advisory board participates in the formulation of the archive's policies. Regional Selection Committees at each archive branch help identify and locate music for inclusion in the archive. The European Selection Committee met in May 1992 at the "Karlshuber IDEAMA-Symposium" and decided on the final list of European compositions to be included in the target collection. There are 424 music titles on. Together with about 400 pieces of the Selection Committee at CCRA, the IDEAMA target collection in total contains more than 800 pieces up to 1970. This selection offers a representative overview on the internationally most important early electroacoustic music.

Additional to this selection from different studios all over Europe, the Selection Committee decided to incorporate three collections as an entity. At first the whole estate of the German pioneer Hermann Heiss, who founded the "Studio für Elektronische Komposition" at Darmstadt in 1951. This collection consists of composers and musicians from all over the world, holding lectures about electroacoustic music at the "Darmstadt Ferienkurse" from the very beginning on. The second entity are all productions of the "Studio für Elektronische Musik" at WDR in Cologne up to 1970. This studio, founded in 1951 from Herbert Eimen, later headed by Karlhein Stockhausen and today headed by York Höller - together with GRM - one of the first studios, which produced "electronic" music. These two collections are just a fraction of the third entity which will form the productions of the "Studio di Fonologia Musicale" from RAI, Milan. It was established in 1955 by Luciano Berio and Bruno Maderna and was closed in 1977 / Works: 139.

From European side, about 70% of the music titles of the target collection are just at ZKM. Most of them are stored on DAT 44.1 KHz, so it will be easy to transfer it onto CDR. Some titles on LP, some titles - especially the estate of Hermann Heiss - are on original tape material. It will be a longer process to transfer this material into digital format because the tape material is in a really bad shape. The transfer onto CDR has started in July 1993. We aim to complete this target collection, together with our partners in Stanford next year. This target collection will enable students, researchers and the public to listen, to study, to compare - and to analyze this music.

5. Some thoughts about analysis of electroacoustic music

If we have to analyze and compare traditionally notated and instrumental performed music, we have an amount of musicological and historical methods and categories to reach this aim. The same is not true for electroacoustic music.

a. Traditional analysis uses the score of a work, which is a graphical representation and an instruction how to act for the performer at the same time. The traditional three-step-transforming process of a musical idea (from the composer to the score - from the score to the performer - from the performer to the public) is not necessary and not intended in electroacoustic music. The composer is his own performer - his musical instruction comes directly through (more or less neutral) loudspeakers to the public. Because of this aspect, electroacoustic music reaches much more directly the ear of the listener than traditional music - and we do not have (in most cases) written notes as a base for analysis.

b. The procedure of composition of an electroacoustic music piece is mostly very different from the procedure of composing an instrumental work. The instrumental work has to be constructed in a way "dry" or abstract. The composer has to create without listening at the same time. In opposition to that, the composer of electroacoustic music in our days mostly is able to listen immediately or very fast to the sound and structures he has created. So the interaction with the sounding material is much more closer then before. The possibility to control, to change during the composition process, to rearrange, etc. is nearly infinite.

c. Because of the possibility of permanent control the composer can work in a way with very different material than in tradition. He can use the computer or the programming language to create a virtual soundscape, which can be changed during the process. This way an electroacoustic work is much more hermetic than traditional music.

d. The electroacoustic composer has available the full and non-calibrated field of sounds. He does not have to care of tuned tones, of the human possibilities of performing (breath, fingers, noise, fastness, rhythmical complications, etc.) not even if he uses a noise or a noise or whatever. Therefore he has available a continuum of every possible that he thinks of sound in any manner he wishes. For this kind of freedom there are no categories and no criteria in traditional music.

Before I try to approach some thoughts about e-

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nic piece, let me ask: What aims a traditional ana-
lysis to find out about a musical work, what is the
purpose of an analysis? To keep it general: Ana-
lysis tries to make musical sense evident. Scienti-

cal research never claim to explain, but to de-
scribe. And to describe something adequately, the
methods of analysis and especially the language
of description must be coherent to the analyzed
object. For the best, the categories and criteria
should be condensed out of the analyzed object it-
self—in correspondence to other comparable
objects.

Now, what is the "normal" procedure of a tradi-
tional analysis? The first step mostly is to find out
which way a piece was composed. That could me-
an technical issues such as general form, instru-
mentation, performing techniques, etc. The next
step in the analysis looks for more musically in-
herent aspects such as the treatment of a theme,
the modulation of keys, etc. A later step tries to
explore more inside structures of a work such as
different characters or to find hidden structures
and proportions inside the piece. Categories like
denliness, atmosphere or variability may come
up much later on, if they come up at all. The
highest level (which is reached not very often —
and that depends, naturally, on the intentions of
the composer) could be to find secrets in the work
the composer even himself does not know, but
which are there and evaluable.

Unfortunately the information that is "normal-
ly" wanted or given about an electroacoustic pie-
ce is mostly a technical one. This means, that tal-
king about an electroacoustic piece, takes place at
a low level, at the first step of possible analysis.
The main reason for that might be, that we don't
have a binding terminology to talk about that.
And a main reason for this is, that through the
enamascipation of compositional practice there are
no conventional forms and also no binding pre-
cedents to produce an electroacoustic piece. Why
did not analysis emancipate like the music itself?
Why aren't we able to analyze pieces on the same
advanced level on which they are composed?

I want to emphasize at this state of discussion:
Don't care about the technical procedure of pro-
ducing a piece - but care of the musical means,
the piece itself! In most cases the technical procedu-
res of the production of a piece are hidden or not
evident at least when the piece is finished. Because
the aspiring result of all those manipulations with
the source sound (if there is one) are that compili-
cated, spontaneously created and of such a variety,
that it will be impossible to make them manifest.
But should we do this at all? I claim: No! For the
first time in the history of music we are face with
the possibility of composing the colonial-
ized richness of every possible sound, presen-
ting itself in an overflowing, dizzy by the listener,
subject measured - better: experienced time. So
we should follow the historical logic of emanci-
pation of artificial possibilities and therefore, the
enamascipation of listening and try to establish a
phenomenological discipline of new methods to
do research in electroacoustic music. And that
means we have to talk about aesthetics and not ab-
out techniques! The same is true for instrumental
contemporary music, which is often influenced
by electroacoustic philosophers and ideas.

At this point of discussion I would like to intro-
duce the "Four criteria of electronic music" (1971) from Karlheinz Stockhausen as a base of argumen-
tation. He introduced as criteria:

1. Composition in musical time continuum.
2. Decomposition of sound.
3. Composition of multi-
layered three-dimensional quality of sound and noise.

Those criteria do not refer on a technical process of production (although, of course, they are inspired by the musical possibil-
ities new technology offers) but on inherent me-
ths of composing musical time. This means in fact,
that these four criteria are not a matter of techne but a matter of musical philosophy and creativity.
Stockhausen says in the same paper: "It does not matter where a sound comes from — the point is, what you really do with it." And that's the point I aim to reach with a con-creative pro-
cess an analysis should be.

Apart from former traditional fonts we have to create (as a composer) or re-create (as an ana-
lyst) a musical sense to evaluate a piece and to
evaluate this certain "unforgettable understan-
ding" of a musical structure that an interesting
compositions provides. Well, the sense of a musi-
cal sound comes out of the context wherein it is
used — like in spoken words. And we can as well in
electroacoustic as in traditional music, analyze this
musical context — the compositional method the
creator of a special musical work uses.

The main problem might be, that there are no re-
ally binding forms of composing in our days. It is,
in fact, a part of musical philosophy that each piece should create its own logic and its own mu-
sical universe. So we first have to try to find out
this logic, which again might be inten-
tended with a piece 'To reach this aim,
Stockhausen's criterions could be very helpful. I
guess, we have to go the way from the whole to
the parts, and then to single events and to single
sounds. That means once again. Let me name the instruments of analysis of an electroacoustic piece today: a media, which
provides fast and exact access to special parts, a
watch to bring experienced time into relationship to objective time and some paper to make notes,
to write down describtions and perhaps make som-

e graphical representations of what we have
heard. And now we may research categories like
solo and tutti, single point or fluctuation, varia-
tion(s), abruptly breaks or other forms to go from
one event to another, gradual development or sim-
ilarity of musical events, or also categories like
density, atmosphere or variability.

You see, some of these categories are found in
advanced analysis of instrumental music. I don't
claim to throw away the methods and instru-
ments of traditional analysis, but we have to chan-
ge, to envisage and to enrich them. We will try to
name the changes and developments of musical
thinking and practices and then transform this
knowledge into new methods of description. The

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task of emancipation of contemporary analysis to come to the same level as contemporary and especially as electroacoustic music, will be sup-
ported by the IDEAMAP project and the possibil-
ities this collection provides - to find existing forms by comparing many diffe-
rent pieces from various countries and historical states. And several researchers are invited to work
together to reach this aim.

6. Technical aspects of archiving
It is evident that archives, especially those under public law, have the obligation to store the materi-
als as long as possible, at least more than 100 years. But, in the digital age - which storage media could fulfill such a demand? We just have very little ex-
perience with digital media since it is a very new development.

6.1 Storage media
IDEAMAP decided to use CD technology (Sonics Solution System) for archiving the material. And the main reason for this is: Since about ten years CDs exist. If we will find out that CDs are decay-
ing like special types of tape do, we will have ten years to transfer the music onto another media which may come up in the future. But a new philo-
osophy of archiving, which might be of interest for us, is coming up. New developments charged the idea from looking for the “ everlasting media” to the idea to try to create the “ everlasting, self con-
trolling archive”, which is as independent of the technical standard of storage and playback tech-
nology as possible. This new direction in archiv-
ing tries to create digital archives that keep its shape of the storage media from time to time and to self-dub those media who are under a certain level of security. This approach wants to use data files who should be readable from every play-
back technology in the future - or better: which will develop parallelly with technology in the process of archiving and checking. This appro-
ach could be very interesting for the future.

A new approach from our partners at CCRMA to store multichannel works is the idea to store the separate channels as data files on CDR-ROMs to enable to load these data files later on each compact hard disk that may come up in the fu-
ture. For initial digital recording and playback they will use probably TEAC (TASCAM) DA-88 with high band 8 millimeter audio tape.

6.2 Access
All sound materials of the target collection and la-
ter updates will be on a set of CDRs. Fast access to the stored material is for the use of the public very important.
IDEAMAP will provide, together with the sound material on CDR, a catalog database basing on a common system on MARC format for every Par-
tner or Affiliate Institution where all titles are avai-

able together with additional information about the piece, the composer, the studio, etc: These data will be searchable to ensure a comfortable and scientific possibility to work with these materials.

7. Summary
I hope you could gain a little insight into the re-
cent developments of the IDEAMAP project, e-
specially from the European point of view - into the techniques we use and also into the issues we discuss. My main purpose of this report was to in-
itiating a discussion about the aesthetics of electro-
acoustic music. Please remember that technology should serve the musician, as an instrument of re-
alization of musical ideas and purposes and not as an end in itself. In the current state of the music his-
tory, I guess, we will be able just to overcome technical questions in favour of artifical substanc-
e of the music.

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