The Multimedia Archive of the Fondazione Isabella Scelsi

Nicola Bernardini[1] and Alessandra Carlotta Pellegrini[2]

[1] Conservatorio "C.Pollini" Padova, Italy
nicb@sme-ccppd.org
[2] Fondazione Isabella Scelsi Rome, Italy
direzionescientifica@scelsi.it

Abstract. This paper documents and summarizes the (still ongoing) work concerning the digital recovery of the complete archive of documents which constitute the legacy of the late composer Giacinto Scelsi (1905-1988). This recovery has a number of peculiarities which are mostly related to the variety of document typologies which constitute the archive. In particular, the archive contains several hundred tapes and just short of 80 aluminum-lacquer discs which have been used directly by the composer in his compositional processes. These audio documents constitute an extremely important source of musicological investigation to discover the compositional methodologies used by Scelsi, most of which are not quite understood today. The specific archival procedure and model used are then described and future work is outlined at the end.

1 Introduction

Italian composer Giacinto Scelsi (1905-1988) lived a very peculiar and interesting life and – as it is often the case – these characteristics are indeed fully reflected in his music [2]. He grew up during the dodecaphonic turmoil while entertaining very close acquaintances with the buzzing intellectual world in Paris in the thirties. He was attracted by the United States as well as the exotic Egyptian and Japanese worlds while being strongly rooted in Rome, the city that he elected as his permanent residence. At the beginning of the fifties, Scelsi experienced a long and deep creative crisis which reduced him to silence for a few years. He came out of that crisis with a renovated composing spirit - and with the strong resolution to resolve the gap between the "zen spontaneity" of improvisation and the long and detailed table-work of occidental composition. He developed a technique which consisted in recording long piano improvisations engraving them on wax discs first, then on magnetic tape as soon as it became widely available. Remaining coherent with the idea of being just a mediator (and being quite wealthy) he decided to delegate to others – usually young composers in need of a job – the chore of transcribing these improvisations to (fairly) standard notation, collaborating with them only in indicating the instrumental combination he had in mind at the beginning and in the finishing touches at the end.

C. Grana and R. Cucchiara (Eds.): MM4CH 2011, CCIS 247, pp. 176–191, 2012.

Fig. 1. One of the two *Ondiola*s belonging to Scelsi

As the time went by, he added to its instrumental palette a couple of *Ondiolines* [4], one of the first electronic synthesizers, because he was interested in its micro-tonal capabilities (cf.Fig.1).

Of course, this compositional methodology caused huge scandals in the academic entourages, where on the contrary the focus was entirely devoted to the abilities of composers to control their activities down to the most minute detail. Particularly in Italy where he lived, Scelsi was considered a fake composer and was isolated for some thirty years [5]. At the end of the seventies, German and French musicologists and music critics re-discovered the modernity of his compositions – which may be placed half way between Varèse and Xenakis, so to speak – and Scelsi was finally recognized and hailed, albeit outside of his country, as one of the most prominent figures of the second half of the twentieth century (cf. for ex. [7]).

Today, the Fondazione Isabella Scelsi, created by Scelsi's himself some time before his death, is actively promoting the composer's work organizing and coordinating research and performance activities in cooperation with other institutions in Italy and abroad.

2 Outline of the Archive

2.1 Foreword

"The establishment of an archive which is intended to document anything that relates to contemporary music - and in particular to the work of Maestro Scelsi" [1] is among the main objectives of the Fondazione Isabella Scelsi. The constitution act further specifies that the archive should be "open to scholars for

reference" and should also pursue "the creation of collections related to musical instruments, sound recordings and any other collectible". Thus, the Historical Archive constitutes the main tool for the real and deep knowledge of the music and life of Giacinto Scelsi. Currently the archive includes more than 16,000 documents, disclosing a wealth of multimedia information of considerable importance in contemporary music.

In July 2000, an official Act of the Archive Superintendence of the Lazio region declared this Archive "of great historical interest". Based in the headquarters of the Fondazione Isabella Scelsi, the archive is currently undergoing a complex reorganization of assets and inventory which is carried out in parallel to a digital transfer of all sound documents (cf.Sect.3). The main objective of this work is to grant access to the archive to scholars and to present them with an easy computational access to documentation. The public opening took place on May 6th 2009, and after that date the archive has been regularly visited and consulted by a variety of national and international users mainly constituted by musicologists and performers.

2.2 Similar Experiences

Before and while undertaking the demanding task of archiving Scelsi's materials several similar or reference experiences were investigated and analyzed to "learn how to do it right". We still look at these and other experiences with great curiosity because the comparison between the solutions adopted by the Fondazione Isabella Scelsi versus other solutions is always stimulating.

Important prior models for the Fondazione Isabella Scelsi archive were:

1. the Arnold Schönberg Center Archive indeed was the most inspiring model: completely realized using Free Software (the archive web services and database are based on the *Joomla* content management system), this archive was the best and clearest example of integration between a pure content management system and a full–fledged archiving and indexing engine that was available at the time;
2. the Archive of the Santa Cecilia Academy in Rome, a very large music archiving endeavor encompassing the works and documents of several hundred composers and the activity of the over–hundred years old Academy, based on a proprietary archiving system (*Gea*). This archive stands indeed as a model for very large multimedia archives;
3. the Archive of the Fondazione Archivio Luigi Nono, based on another Free Software content management system (*drupal*) interfaced with a *Framemaker* database back-end, was closely investigated because of the similarities of materials and logistic situation between the Fondazione Luigi Nono and the Fondazione Isabella Scelsi;

In addition to these models, the participation of the Fondazione Isabella Scelsi to the "Archivi del Novecento" project (an aggregation of archives based on the aforementioned proprietary software *Gea*) has been essential in acquiring the necessary knowledge of standards and canonic record structures, since this

project is an attempt to integrate multiple archives using the *MAG–XML* standard as an exporting data aggregator.

However, in the end the Fondazione Isabella Scelsi decided to take yet another route to create its own information system. This was a hard decision to take, but there were many elements that led up to it as an inevitable choice. These will be synthetically summarized here:

- adopting an existing stock content management system (such as *Joomla* or *drupal*) would have required an important amount of extension work to accommodate the multimedia documents that are at the core of the archive. Furthermore, all this work would have resulted in a half–baked situation exposing the archive to potential failures in the long run;
- adopting the proprietary software *Gea* was out of the question for three essential reasons: a) first and foremost, its TCO (Total Cost of Operation) was far from the possibilities of the Fondazione Isabella Scelsi: the price tag of a basic *Gea* system in 2006 was over a 15 kEuro range; b) given the specific document set of the Fondazione Isabella Scelsi, this software would have required a consistent set of extensions which would have certainly doubled (if not more) its TCO, and c) the software would have been forever out of the direct control of the Foundation, thus exposing the stored data to the risk of being unreadable due to the disappearance of the privately-owned software house (ElsagDatamat);
- the integration between a content management system and an archive back-end realized with either proprietary (*Frememaker*) or Free Software (*tomcat*) components was deemed unsatisfactory in its cost effectiveness: the effort would have been considerable for the kind of results that were foreseen.

Other considerations were: i) one of the authors of this paper had already accumulated in 2006 considerable experience in building web–based archival and indexing systems using the latest generation frameworks and languages (such as *Rails*, *Django* or *CakePHP*); ii) he was amenable to the idea of creating a brand new system at no extra cost for the Foundation at the condition that he would be allowed to license it under a Free Software license; iii) the semantic links between the different typologies of document (such as music scores, magnetic tapes, letters, photographs, etc.) were completely unknown at the time and they still remain mysterious to a large extent; this situation required an information system completely open and under the strict control of the experts; iv) while not setting any formal time requirements, the Fondazione Isabella Scelsi needed the system as quickly as possible, because the opening of the archive to a specialized public was a very important objective of its board of directors.

So in the end it was decided that a new information system based on an *agile* programming paradigm[3], including thus test–based development and fast release turnaround time. A few months later `FIShrdb` (cf.Sec.2.5), an information system based on the *Ruby–on–Rails* framework, was born and functional. A year later, the archive opened its doors to the public sporting this multimedia system already storing several thousand records of all kinds.

Lately, in a joint research project with IRCAM the Fondazione Isabella Scelsi was exposed to a new kind of software for genetic analysis of musical works (`MuTEC`), basically constructed with the same *agile* principles as `FIShrdb`. While a close integration between `FIShrdb` and `MuTEC` is currently under scrutiny, it is clear that such a thing is possible only because both systems are built with flexibility and adaptation to change in mind - thus reinforcing the idea that the strategic choice carried out by the Fondazione Isabella Scelsi has been the right one.

2.3 Reorganization and Inventory

The re-ordering of documentation took off from the creation of a framework within which all documents have been organized following a number systematic coherence criteria. In the first place, a sharp distinction between a private archive and a proper music archive was created. The private archive includes correspondence, poetry and philosophical writings, notes, press clips, printed matter, drawings and photographs, administrative and family paperwork, relationships with agencies and institutions (cf. Fig.2). The music archive is subdivided instead into scores, tapes and disks. Two additional sections have been added to this early kernel: the first is a bibliographic section which carries collected essays, studies and articles on Giacinto Scelsi, in order to provide scholars with initial orientation and support of their research; the second section collects and documents the activities of the Fondazione Isabella Scelsi in recent years. Furthermore, an inventory of the personal library of Giacinto Scelsi was created. The books which constitute this library contain many hand-written annotations by Scelsi himself; many of them – especially those related to Eastern philosophies – were very influential on the creative activity of the composer. Therefore, this library is a particularly interesting source of insight of Scelsi's creative processes.

2.4 The Documents

Within the private archive, the documents were aggregated to form organic folders which have been organized in turn into eight archival series in order to constitute the typical hierarchical tree structure. The *correspondence* series stands out documenting the extraordinary breadth of Scelsi's contacts with many personalities from the worlds of music and art.

In the musical archive, significant documents include manuscripts, printed editions, blueprints, sheets, transparencies, drafts hand-annotated by the author. To catalog this series a specific record model was adopted. While respecting the indications provided by the catalog rules for musical manuscripts and prints, this record simplifies its layout allowing an easier user access to information. A folder was created for each composition by Scelsi gathering all related material together (manuscripts, printed music, blueprints, transparencies), thus providing the user with a complete picture of all the documentation related to a specific work.

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Fig. 2. A sample from the printed matter section of the Archive

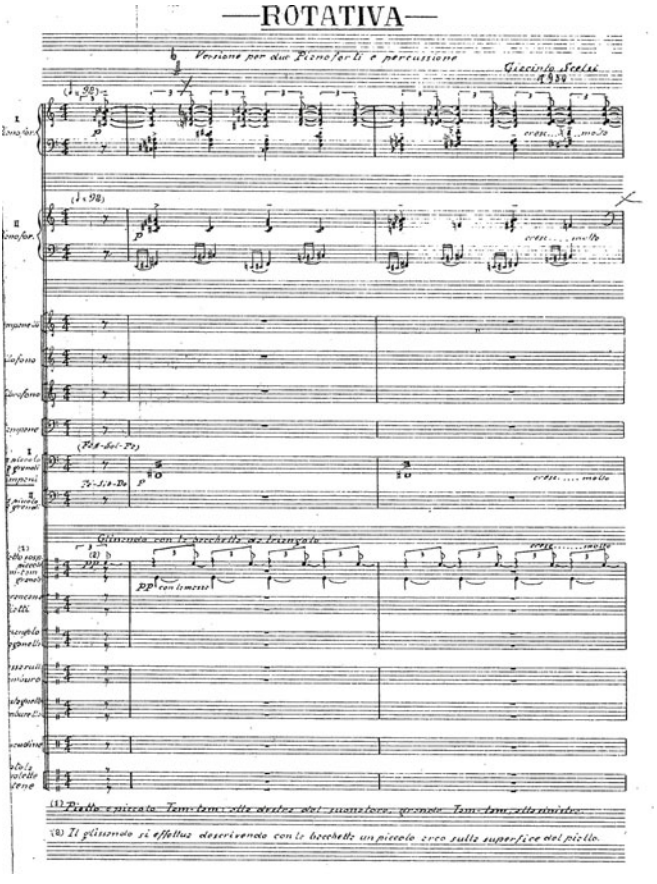

Fig. 3. A sample from the manuscript score section of the Archive

This unique set constitutes the main core of the entire archive and has led to the need of a thorough review of Scelsi's production catalog as it was known so far, opening up new and stimulating perspectives on the evolution of the style of the author. A careful analysis of the scores has led to the discovery of a considerable number of unpublished compositions as well as incomplete ones or fragments merged later on into larger-scale works: a still ongoing detailed analysis and comparison work is giving interesting as well as surprising results.

The archive also holds scores by classical composers which where inherited from the composer's family (especially from his mother). Finally, there are scores of contemporary compositions, many of which carry a signature and a manuscript dedication to Scelsi.

Through the peculiarity and interest of these documents, along with the multimedia tools that allow their access and identification, the Archive of the Fondazione Isabella Scelsi has spun off a number of research projects carried out in collaboration with leading research institutions in Italy and abroad.

2.5 The Software

The cataloging and inventory of all this material was done through an *ad hoc* software: `FIShrdb`[1], fully released under Free Software licences (GNU GPL 2.0). This software meets the strict criteria and international standards ISAD archival and ISAAR. In particular, `FIShrdb` (cf. Fig.4) integrates the characteristics of a hierarchical database (based on a tree representation of documents) with those typical of relational ones. It was designed with extensibility and scalability in mind in order to manage the entire taxonomy of documents which can be found in the archive of the Fondazione Isabella Scelsi (paper documents, music scores, tapes, photographs, etc.). It is particularly easy to develop specialized records for each type and the different data types are linked through a sophisticated system of authority files that allow users to search transversally through access keywords of names, places, organizations and composition titles (with the added possibility of searching also the transcriber, the author of lyrics and the instrument set). A user-friendly interface has been designed and added allowing the user to search the entire archive performing free-form or qualified and constrained searches, showing search results side by side with their location in the hierarchical tree of the archive.

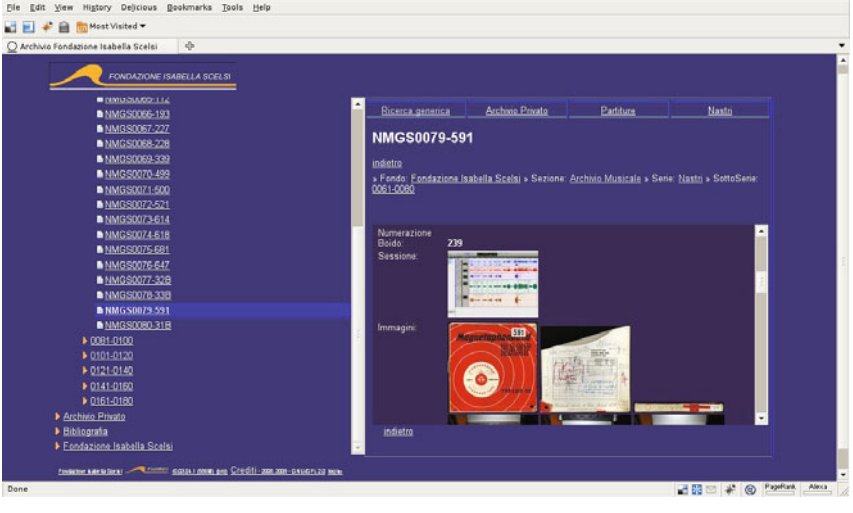

Fig. 4. A snapshot of the `fishrdb` application

2.6 Future Work

Upcoming objectives of this work include the digital transfer of all main series (scores, reviews, correspondence) in order to create an integrated service for research, browsing and access to sources of various types, allowing

[1] `http://trac.sme-ccppd.org/fishrdb`

seamless navigation, for example, from a bibliographic record to a particular score to a specific scanned image, and further on to the letters and documents that describe its developments, to the reviews in the press, up to the listening to a related audio recording outlining the compositional processes of the author. The development of a connection and integration processing of digital data coming from very different types of source documents (letter evidences, reviews, scores, tapes) was designed with the needs of a specialized or otherwise interested audience in mind, presenting the latter with an extensive information set tightly organized and integrated. All these developments will be carried out following standards and procedures which will allow the Fondazione Isabella Scelsi to join the Italian Music Network (*ReMI*) which is currently being developed by the Italian ministry of cultural assets and activities within the *InternetCulturale* portal. This will allow in turn to be part of an extended multiple-source relational database which will allow to navigate through an entire vertical network of digital music collections connected with each other through common logic and structure.

3 The Tape Collection

While paper documents lend themselves naturally to standard archival techniques, the archiving of Scelsi's tape collection presents a number of difficulties which exceed the usual problem of archiving of multimedia data.

3.1 The Recordings

The tape collection has been divided in two large groups: a) 287 tapes of improvisations and other compositional material by the composer and b) a still unknown number, probably in the 400–500 range, of recordings by Scelsi of other composers' music (from the radio and from other sources, such as vinyl discs etc.). This division was operated by the Fondazione Isabella Scelsi at an early stage right after Scelsi's death and has been adopted later on for convenience in determining a recovery strategy. However, four years of systematic recovery work of the collection (digitizing the first 287 "primary" tapes over a total of ca. 700 tapes) have already shown that this division is somewhat artificial, since many tapes contain a mixture of improvisations, original compositions and works from other composers. It is highly probable that Scelsi considered tapes as sketchpads where anything valuable could be recorded for future memory – a sharp division between his music and that of other composers was not particularly important to him. At any rate, group a has been termed *tapes of primary interest* while group b became the *tapes of secondary interest*. The digitization of tapes has begun with group a and this process was recently completed in April 2011. After the end of the digitization of group a, group b will be digitized and archived.

Furthermore, a small set of 76 instantaneous recording discs (lacquer-coated aluminum discs which could be singularly engraved with a domestic equipment) belonging to Scelsi was recently uncovered along with the engraving equipment

Fig. 5. Scelsi's disc–engraving recording device

itself (cf. Fig.5) – thus confirming the hypothesis that Scelsi changed his composing techniques way before a magnetic tape recorder was available to him. These discs will also be transferred digitally in the near future.

3.2 Peculiarities

Right from the start it was clear that this would not have been the classical audio recover-and-restore job. Scelsi had just about the same consideration for his tapes as he would have for old sketches hastily jotted down on recycled paper. Tapes were recorded using several tape recorders but always through microphone capture. Most of the time, Scelsi was operating the tape recorders while simultaneously improvising, and the resulting technical quality of the recordings is mediocre at best. All recordings carry a considerable amount of electrical noise as well as abundant environmental noise (cars from the street below, birds, telephone, etc.). Furthermore, while many inscriptions appear on the tapes' container boxes (cf. for ex.Fig.6), the fact that any of these notes may apply to the tape contained therein cannot be taken for granted: Scelsi was known to recycle tapes and boxes, and their misplacement is a common casualty.

Given these initial conditions, two main considerations have driven the recovery of Scelsi's tapes: 1. the electrical noise added by time degradation the tapes is insignificant compared to the large amount of other noise; 2. on the other hand, the identification of very basic properties (such as tape speed or direction) was often found to be quite difficult. In such a situation, the environmental noises proved to be extremely useful (cf.Sect.3.3). Therefore, it was decided early on to transfer the tapes *as they were*; no restoration nor filtering was attempted or desired.

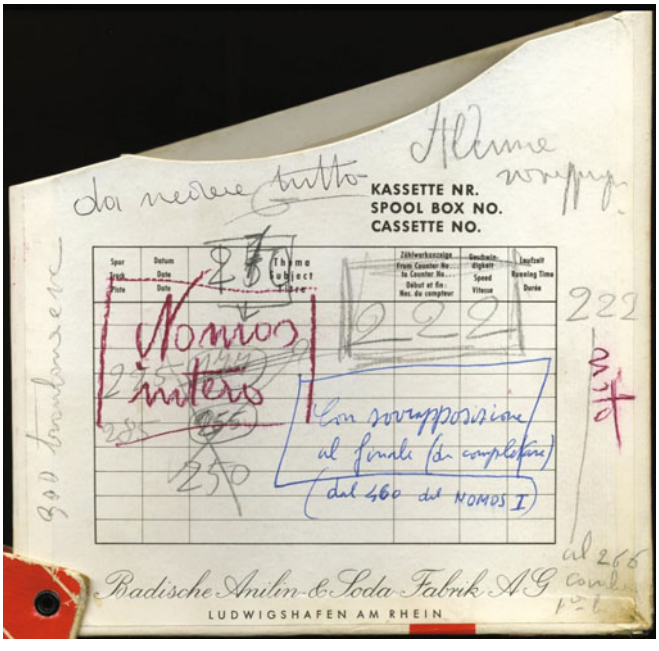

Fig. 6. An example of tape container (591–002)

3.3 Identification Techniques

Yes, strange as it may seem, even the rolling direction and speed of tapes was very often difficult to assess and deceiving. Ondiolas may play synthetic waveforms with slow attacks and very long tones in mid ranges, thus providing no clue related to tape speed and direction. And the recording quality is so bad, and the music so peculiar and experimental, that even piano sounds can often be deceiving in assessing the recording conditions. After tape speed and direction information, which is needed for proper digital transfer, other information could prove to be very useful. Any information on the date of recording, for one, could provide valuable insight in comparison with the date of composition of the second half of Scelsi's production to say the least. Unfortunately, this information is almost completely absent in explicit form. Information concerning the mapping between tape materials and scores is essential to understand in full the actual compositional process of Scelsi's music – assigning proper roles to the composer himself, his copyists, the post-writing editing work, etc. The retrieval of this information constitutes an even more complicated and (so far) ill-defined problem (cf.Sect.5).

Therefore, identification techniques had to be put into place very early on – and this is where all the noise that is present in all tapes constituted a great help.

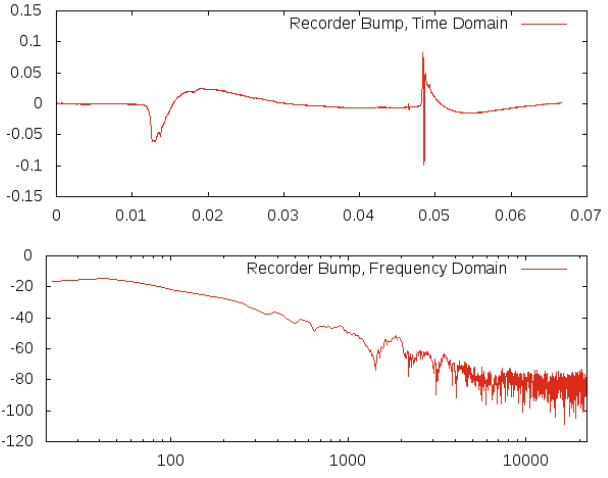

Fig. 7. An example of tape recorder *bump*

Currently, these techniques are still quite empirical and they certainly could use stronger scientific evidence (cf.Sect.5).

The strongest grounds for tape speed and direction are currently given by the so-called *ancillary sounds* provided by the tape recorders themselves. Scelsi never performed any editing on his tapes, so all the record drop in/drop out noises are there. Therefore, most of the tapes carry interesting information precisely in these ancillary sounds (cf.Fig.7). These can be correlated with template sounds recorded *a posteriori*, and the results can give valuable information to identify a) speed and tape rolling direction, and b) the machine that performed the recording. Consequently, item b can provide valuable insight about the date of recording, or at least about a potential range of dates, since it is possible, in some cases, to reconstruct the date of acquisition a given tape recorder out of the administrative documents present in the archive.

Another interesting information is the room's impulse response present in the recordings, which can be correlated too with an *a posteriori* template (cf. Fig.8): Scelsi lived and recorded his improvisations in at least two different houses in Rome, in different periods. Identifying the room could lead to the specific time of recording.

Finally, environmental sounds can sometime come to the rescue: bird sounds allow to identify broadly season/hour of recording, car noise allow to identify tape direction because Via S.Teodoro is a one-way street[2],etc.

In some very rare lucky cases, fragments of radio recordings allow to identify very precisely the date of recording.

[2] Though this detail is somewhat complicated by the fact that street direction changed around the beginning of the eighties.

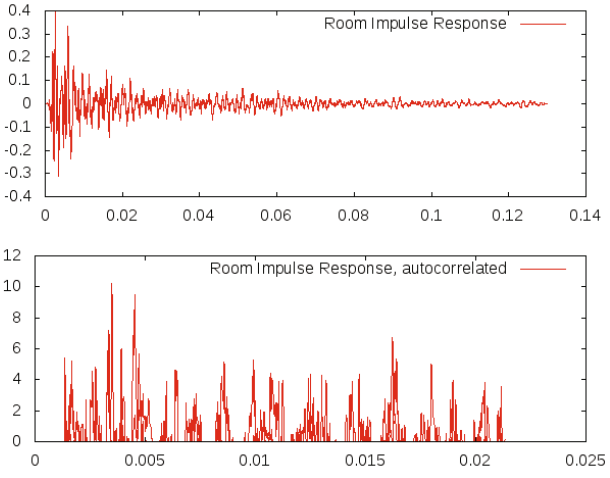

Fig. 8. The impulse response of Scelsi's living room in Via S.Teodoro 8, Rome

4 Transfer Procedures

Up to the date of this writing, all tapes have been transferred to digital files using a Studer A810 tape recorder connected to a Digidesign ProTools workstation using a 96 kHz sample rate and 24-bit samples. The digital files have been saved on a an array of Firewire 800 disks in RAID-1 configuration (plus 1 disk for a running backup).

Each transfer to date was carried out respecting the following protocol:

1. the tape material (acetate or polyester) is identified along with possible rolling difficulties (mildew presence, etc.);
2. the effective length is measured with a first run at moderate speed (not touching the tape heads);
3. existing splices and corruptions are photographed and their position is logged;
4. an order number is created combining a progressive indexing number along with the numbers of two previous numbering attempts;
5. the following data get archived:

   a) order number
   b) manufacturer and type of Magnetic tape (as it appears on the container box)
   c) flange diameter
   d) measured tape length (in m)
   e) measured tape length (in feet)
   f) tape material
   g) tape speeds
   h) audio positioning (head, tail)
   i) recording typology (stereo, mono A/B, etc.)

j) transfer software version
k) file format
l) sample rate
m) sample bit width
n) transfer start date
o) transfer end date
p) notes

6. a "ProTools session" is created along the following lines:
   i) the top tracks hold the uninterrupted transfer at different speeds (as required by the speed identification – cf. Sect.3.3);
   ii) two mono tracks follow, carrying out the tape "layout"
   iii) one (mono) or two (stereo) tracks follow containing the full audio sequence in the identified order, starting from side A and following on side B, with all the identified reading speeds; these are the only active playback tracks (while the others are muted).
7. the transfer is subdivided in "regions" which get numbered progressively; the regions are detected identifying all recording punch in/out performed by the composer; an example of this sectioning work is shown in Fig.9;
8. all regions, splices and stretches are identified and logged on an ASCII text file;

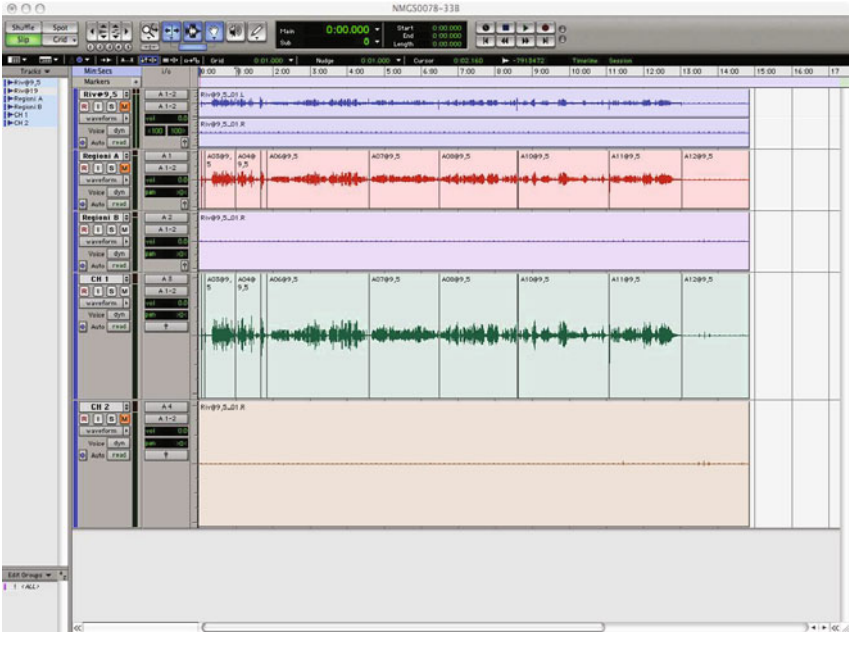

Fig. 9. An example "ProTools" transfer session

9. all other peculiarities (tape content, spoken fragments, container notes, rough calligraphic analysis, etc.) get logged on an ASCII text file;
10. a snapshot (image) of the session is performed;
11. the container is photographed and scanned.

A the end of each session a disk backup is performed. All data is saved using well-known open standards (*AIFF-big-endian* `.aiff` for the audio files, *TIFF* for the *ProTools* session snapshots, *ASCII* for the text logs). Proprietary files (such as the *ProTools* sessions themselves) are exported on open standard files (*ASCII*).

5 Future Work

Even if the digitization work has begun over four years ago, it has still a long way to go to be completed (only the complete set of "primary" tapes have been archived to date – about 40% of the total number). However, this just the beginning of the work to be done on Scelsi's legacy: a complete and detailed archive of Scelsi's is an essential pre-condition in order to start a wide range of investigations on the music and on the compositional methods of this still very mysterious case in contemporary music.

Some of this research is already being planned. It concerns: a) a mapping of Scelsi's tape recorders equipped with a detailed analysis of their *machine fingerprinting* (ancillary noises, background noise, frequency response, etc.); such a mapping would constitute the solid grounds for a scientific analysis of the ancillary noises present on many tapes; b) a mapping of Scelsi's recording environments (i.e. the rooms where he used to record); c) the development of a software tracking application which might be able to compare moderately large corpuses of audio material along with scores in symbolic format to propose evidence of similarities to scholars and musicologists; and d) a full analysis of the Ondiola synthesis and performance modes to derive (and reconstruct) Scelsi's playing out of the recorded material.

Acknowledgements. A complicate and long-term endeavor such as the one described cannot be achieved without appropriate funding and a motivated group of people supporting it. To date, this work has been funded in full by the Fondazione Isabella Scelsi and actively promoted and supported by its President Nicola Sani. Mauro Tosti Croce, Coordinator of the archive of the Fondazione, has substantiated this work providing valuable scientific insight and suggestions concerning the archival procedures and techniques. Barbara Boido, member of the board of the Fondazione and long-standing friend of the late Scelsi, has provided a large amount of historical information concerning habits, machines, locations, and much more which proved to be extremely useful even at such an early stage.

Considerable initial help was provided by Prof. Sergio Canazza from the University of Padova. The first year of this digitization work has been carried out

in close collaboration with Piero Schiavoni (Studio Coltempo, Rome), to whom this report owes most of the transfer procedure described above (cf.4) and much more. Besides his universally acclaimed technical excellence and virtuosity, Piero has been an integral part of most contemporary music recordings in Rome and abroad since the 70s (including some of Scelsi's own recordings in his late period) and as such he is also a living memory of many situations and cultural passages which are difficult to reconstruct nowadays.

Since the beginning of 2007, the Fondazione Isabella Scelsi has been closely collaborating with the *Istituto Centrale dei Beni Sonori e Audiovisivi* (ICBSA – the Italian National Sound Archive) and this specific project has been strongly supported by its Director Massimo Pistacchi. The archival work is being carried out under the expert and attentive supervision of Bruno Quaresima and Carlo Cursi.

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