

Roberto Gerhard's Sound Archive at the Cambridge University Library

Background

The existence of Roberto Gerhard's sound archive was first brought to my attention by an article written by Margarida Estanyol appeared in the Bulletin of the Spanish Association of Musical Documentation [ESTANYOL, 1996]. The paper reported about the cataloguing of the non-musical manuscripts from Gerhard's collection deposited by Dr. Rosemary Summers in the Cambridge University Library after the death of Roberto's wife Poldi, in 1994. Sources described include notebooks, personal correspondence, drafts and printed articles and the composer's personal library, as well as photographs and sound recordings. However, according to Estanyol, the two latter were not catalogued due to time and funding shortage. My interest in the collection was raised in the context of my master thesis, whose opening chapter traces the historical guidelines of the development of Spanish electroacoustic music [GARCÍA KARMAN, 2004]. Admittedly, Gerhard is the first Spaniard to have worked with magnetic media in his compositions, as well as the first composer overall to have done so in British territory [DAVIES, 1981]. Though direct examination of the archive was out of the scope of my research at that time, the hypothesis that the 150 magnetic tapes (in figures estimated by Estanyol) would be a cornerstone for unveiling the details of Gerhard's pioneering work in this field was proposed. It was not until later, that closer work on Spanish electronic music during the period of Franco's dictatorship, brought me back to the trail of Gerhard's tape collection. In October 2007, in response to a request to the Cambridge University Library for further information on the current status of the archive, Mr. Richard Andrewes, Head of the Music Department, explained that the tapes had not been sorted or documented, nor attempts had yet been made to digitize them. After explaining my interest, Mr. Andrewes kindly agreed to provide for access to examine the collection. This report describes Roberto Gerhard's sound archive, based on the attempt of a first inventory of this overlooked source, carried out by the author during the 8th-10th December 2007.

General Description

At my arrival to the Cambridge University Library, the constituent elements of the sound archive were checked out of the deposit and prepared on two library trolleys in the Anderson Room. The first trolley held around 150 open-reel ¼" magnetic tape cardboard box volumes and plastic containers of different sizes. The second trolley was populated with similar boxes, except they contained no tapes. I was also presented with a selection of further materials including open

reels of different sizes without box, and a 35 mm. film¹. Boxes are rich in tags and handwritten annotations. If we trust them, the archive contains a wide selection of Gerhard's own music. Concert recordings, theatre pieces, radio productions, instrumental, mixed and pure electronic works are found back to back with rehearsals, tape assemblies and other production materials. Inside the boxes many tapes are protected in sealed plastic bags and visual inspection suggests an overall good shape of the carriers, considering that most of the tapes can be dated back to the late 50s up to the early 70s. However, some volumes indeed exhibit problems associated with unmaintained and aged magnetic media, ranging from uneven or loose winding, up to film chemical degradation and moulds. Cotton lint-free gloves were used for manipulating boxes and tapes. Different aspects of the collection were documented graphically, and room temperature and humidity conditions were monitored during the examination.



Sorting the Collection

It was decided to start sorting the collection, combining both full and empty boxes in a single body, with the interest of obtaining an overview of the complete set. Boxes were first organized attending to their size on a third bigger trolley, and brands and tape types of each size were put together. On a second pass, an attempt to rearrange the boxes within each group of the same brand and type was made. Even though labeling occasionally suggested sorting and grouping

1. The film is a 35 mm. copy of *DNA in reflection* (1963), a documentary for which Gerhard composed the soundtrack using electronic techniques.

patterns, the arrangement reached should be considered as the result of a practical compromise, and might be prone to revision in the future. Once sorted, the collection revealed an amount of about 280 [?] cardboard boxes and plastic containers of a variety of sizes. Based on this organization, every tape container was given an index, and the inventory was tracked down in a File Maker database. The database structure was prepared in forehand and optimized on-site during the examination of the tapes. The fields recorded at this point were <index>, <box description>, <box size>, <box annotations front/back>, <box annotations side>, <box annotations inside>, <box contents>, <reel description>, <reel annotations> and <tape condition>. Even though an inventory index was assigned to the totality of the boxes, only 224 entries were recorded in the database due to time limitations.

The Boxes

The box collection consists of a colourful assortment of commercial tape packages and plastic containers of different brands, types and sizes. The dominating format is the 18*18 cm. cardboard box in which 7" diameter reels are shipped, followed by cardboard box sizes measuring 15*15 cm. and 13*13cm, fitting 5 ¾" and 5" reels respectively. An amount of less represented cardboard box formats include no more than ten 21*21 cm. packages for holding 8 ¼" reels [?] and, on the smaller end, generic brown boxes containing 3" reels. Besides the cardboard box packages, a limited group of tapes were also found in a variety of plastic tape containers of different sizes. Finally, a single 27 x 27 cm. cardboard box with a 10.5" NAB reel, was suspect of belonging to another collection of the Library.

About one third of the boxes are Scotch 3M commercial packages, available in a variety of part numbers: 102, 111, 111A, 141, 150, 151, 190, 200, 203, 311...² Information provided by the Scotch boxes, like material used for the base film (acetate, polyester and PVC), tape lengths (1200, 1300, 1800 and 2400 feet), lubricants, tape calipers, etc... provide a first insight to the heterogeneous nature of the tapes of the collection. It also suggests the existence of different problems and uneven states of tape degradation, which should be taken in account when developing preservation strategies. Other package brands represented in the collection are EMI and BASF and in lesser extent Irish, New International Electronics, Ampex, Zonatape, Verrio, Sychrotape, Ferrotape, DuPont and Philips. Some boxes correspond to institutional packages, exhibiting logos of the BBC, and Oxford University Press. Finally, there is an important number of generic -mainly white- cardboard boxes.

Annotations

Many boxes and tapes have printed or handwritten annotations describing their contents. A number of these can probably be attributed to Roberto or Poldi's hand. Annotations can be

2. Part numbers of the boxes found in the collection correspond to tapes introduced by Scotch between 1948 and 1964 according to the manufacturer <www.aes.org/aeshc/docs/3mtape/aorprod2.html>

found all over the packages, including the tape lid, the back of the box or even inside the box. They range from brief keywords, to more extensive documentation of the recordings, and may include information such as work title and composer, performance credits, dates, or technical details like tape speed, equalization, recording service, etc... In a number of cases, this data is carefully organized in fields of information on production labels, while in many other, handwritten lists have suffered a number of corrections -they are often crossed-out and overwritten, probably due to tape reuse- and it is sometimes difficult to identify the latest valid names. A particular group of annotations that identify and comment on the quality of the recordings and performances, might correspond to an attempt Poldi made to classify the tapes after the death of her husband. Moreover, captions can also be found on the reels, and in some cases additional production sheets accompany the tapes, yet these don't always match the description of the box in which they can be found. Both, tapes in wrong boxes and removable box lids, surely contribute to the labeling confusion.



Following existing preservation recommendations³, box and tape labeling was recorded as part of the inventory. The following, is an incomplete but representative extract of the annotations found, that might be taken as an estimate of the contents of the archive. A great majority of titles correspond to Gerhard's works. Track names like *Alegrías* (1942), *All Aboard* (1958), *Asylum Diary* (1959), *Audiomobile 2 - DNA* (1963), *Audiomobile 3 - Sculpture* (?), *Caligula* (1961), *Canciones Toreras* (1943), *Cantares* (1956), *Cappriccio for Solo Flute* (1949), *Catalan Songs* (1917), *Cancionero de Pedrell* (1942), *Chaconne for Solo Violin* (1959), *Concert for Harpsi-*

3. See for example the practice guidelines proposed in [LIBRARY OF CONGRESS, 2006]

chord Strings and Percussion (1956), *Concerto for Orchestra* (1965), *Concerto for Piano and String Orchestra* (1951), *Coriolanus* (1959), *Cymbeline* (1949), *Don Quixote* (1944), *Epithalamion* (1966), *Funnyhouse of Negro* (1964), *Gemini* (1966), *Guitar Fantasia* (1957), *7 Haiku* (1922), *Hymnody* (1963), *King Lear* (1955), *Lament for the Death of a Bullfighter* (1959), *Leo* (1969), *Libra* (1968), *Little Barber of Lavapies* (1954), *Macbeth* (1962), *Nonet* (1957), *Pedrelliana* (1941), *Pericles Prince of Tyre* (1958), *String Quartet No. 1* (1955), *String quartet No. 2* (1962), *Symphony nr. 1* (1953), *Symphony nr. 3 Collages* (1960), *Symphony nr. 4 New York* (1967), *The Acond of Swat* (1954), *The Anger of Achilles* (1964), *The Barber of Lavapies* (1954), *The Count of Montechristo* (?), *The Duenna* (1947), *The Man Born to be King* (1966), *The Phylosophers Den* (1963), *The Plague* (1964), *The Revenge for Love* (1957), *The Tower* (1962), *Violin Concerto* (1943), *Virgo* (?), *Vox Humana* (?), *War in the Air* (1952), *Woyzeck* (1961), *Your Skin* (1958), etc...⁴ populate the tracks lists found on the boxes. They range from Gerhard's music for concert, to incidental works and arrangements. Recordings of live works are often taken from rehearsals or recitals, including a few credited as first performances. Featured interpreters include the BBC Symphony orchestra and several other BBC ensembles, as well as the Stockholm Philharmonia Orchestra, Boston Symphony Orchestra, Parenin String Quartet, London Sinfonietta, American Composers Orchestra, etc... and conductors credited include David Atherton, Sir Collin Davies, Antal Dorati, Dennis Russel Davies, Norman del Mar, Jacques Lois-Monod, Frederik Prausnitz, Hans Rosbaud or David Sutherland. Some of these were sold as commercial recordings (like the *Third Symphony* with Prausnitz in EMI) or are copies of master tapes from other archives. However this collection is arguably the most important source for historical recordings of Gerhard's instrumental music.

It is however in the domain of his works with tape, where the sound archive acquires the significance of being a unique collection of primary sources, or if I may be forgiven the simile, of magnetic manuscripts. Boxes suggest the existence of both finished tapes, and an important number of "byproducts" such as effect recordings or compounds⁵, with labels like *sound tape for Collages* or *Roberto working on piano strings, electronic sound assemblage*, etc... In case of mixed music, where electronic sounds are combined with the instrumental ensemble, annotations point to the existence of tape parts as well as to recordings of the whole works. The labelling of around sixty 5" 3/4, 5" and 3" boxes that had to be left out of the inventory due to time limitations, suggests this group of tapes might have been Gerhard's favorite format for his own electronic productions. Once documented, they will throw further light on some unclear aspects of his electronic catalogue. Their recovery would offer an invaluable insight into Gerhard's electroacoustic music and compositional thinking.

4. As orientation to the reader, compositions have been dated according to the catalogue of works published in [BOWEN, 2000]

5. I am using Gerhard's own terminology, as found in a quote from a letter from Gerhard to Hugh Davies: "...an accumulation of work in state of near-readyness, I mean ready for com-po-si-tion, namely ca 25 to 30 7" reels of multilevel compounds classified as 'good'" [DAVIES, 1981]

A further group of tapes, can be identified as part of Gerhard's private music collection. They consist mainly of concert recordings or compilations including composers names such as Robert Ashley, Bartok, Berio, Berg, Boulez, Debussy, Michel Decoust, Homs, Maderna, Gerard Masson, Mestres-Quadreny, Ligeti, Nono, Takemitsu, Varese, Earle Brown, Prokofiev, Messiaen, Schoenberg, Strawinsky, Stockhausen, Roger Reynolds, and last but not least, Webern. Together with some other tapes, labelled as "Arab Music", "Korean Music", "African" or "Chinese", these recordings constitute a sample of the musical interests of the Catalan composer.

Another set of documents that catch the eye are recordings of interviews given by Gerhard. Finally, a few titles could not be identified and need further attention in order to clear their significance. Further work is also needed to understand the meaning of characteristic markers, like the green tape pieces that can be found on several boxes.

The Tapes

It is still premature to offer figures of the number of tape reels that form the collection. Out of the 224 documented boxes, 116 contain reels with tape. As noted above, around 60 smaller boxes were not recorded in the database, though rough inspection revealed that the majority of these contain tapes. An indeterminate number of tapes without boxes, which remained in the deposit and were not examined, also need to be included in this figures (presumably, some of these would belong together with matching empty boxes).

All tapes encountered during this investigation presented a single tape width of ¼", and are wound on plastic⁶ reels with diameters which range between 8.25", 7.5", 5.75", 5" and 3"⁷, with a cine 3-spline center spindle, commonly found in consumer tape recorders⁸. In rare cases smaller reels were found inside 7" boxes, and at least one 7" box contained two smaller reels inside. About one half of the 116 inventoried tapes are conserved in closed plastic bags. Trusting the labeling, the most common tape speeds in order of appearance are 7 ½ ips (around 60 tapes)⁹, 3 ½ ips (around 35 tapes), and 15 ips (over 20 tapes). However speed is undefined in a number boxes and reels, and identification might not be a trivial task, specially in the case of electronic sound assemblies. Furthermore, various examples are found where several speeds are documented for different tracks of a single tape, and once, a note indicates that tape speed was manually slowed down during the course of a recording in order to fit a live performance where the tape was coming to an end (!). Further technical observations inform about the number of tracks (mono/stereo) and track format (full track/half track). More atypical are annotations which relate to tape equalization (*CCIR* was noted on 3 tapes), and no notes were found relating to the use of noise reduction on any of the boxes examined.

6. With the exception of a single Ferrograph 8.25" metal reel.

7. As stated before the single 10.5" NAB reel found is suspect of belonging to another collection.

8. <www.richardhess.com/notes/formats/magnetic-media/magnetic-tapes/analog-audio/reels-and-hubs/>

9. As a reference, a standard 7" reel with 1200 ft. of tape at 7 ½ ips. can hold just over 30 minutes.

Another relevant aspect is the base film of the magnetic carrier. In magnetic tape preservation literature it is common to distinguish between film base materials as they are subject to different degradation processes which require specific treatments. Acetate tapes were manufactured between the 30s and 70s, while plastic (Polyester/PVC) films started being manufactured around the mid 50s. Acetate based films are usually translucent, and may be recognized holding the tape against a strong light. Both cellulose acetate and plastic film bases were found, agreeing with the tape manufacturing date range and the box parts documented. Several reels have both acetate and plastic base films wound together.

The existence of tape with a variety of pigment colours, and the discovery of a number of tape leaders in single reels indicate that is not uncommon to find multiple tapes wound together. Leader and cue marker colours can presumably be put in relation with the annotations on the boxes with coloured writing, or literal names (“red”, “green”, “pink”...).

Tape Degradation

As suggested by the varied tape types and packaging conditions, direct examination confirms an uneven state of degradation. Visual inspection shows that about half of the tapes are in an apparent good shape. Of course, this can't be taken as guarantee of being free of common aging degradation processes like lubricant loss or sticky tape syndrome, and actual condition of these tapes should be further investigated. Although vinegar odor was not perceived either, acetate tapes of this age are likely to be endangered by vinegar syndrome, and tests like A-D strips



might be useful for assessing acetate-based tape condition [REILLY, 1993]. To the eye, the most common problems are uneven or loose winds, and occasional mechanical deterioration of loose tape headers in cases of poorly stored tapes. More severe damages are also encountered, evidenced by tape deformation and curly tape surface, suggesting a more advanced state of chemical degradation of some carriers. Furthermore, at least two tapes were found to be affected by moulds. Recommended practice includes vacuuming with a HEPA filter, followed with Pellon cleaning on both sides of tape. [LIBRARY OF CONGRESS, 2006]. Handling of moulds is considered a potential health hazard, and appropriate protection is advised. Another challenge is splice handling, specially in the case of Gerhard's electronic sound montages, though no splices were directly examined at this point. Also problematic seems the documentation and preservation of tape cut-ups and other heterogeneous materials, like the body of small reels hooked by a rod shown in the illustration above.

Conclusions

This work constitutes a first step to bring to the surface the body of Roberto Gerhard's sound archive at the Cambridge University Library. It is hoped that this effort might have contributed to raise an interest in the significance and the condition of the archive, a cultural treasure of 20th century European music suffering an immediate risk of permanent loss. In first place, further work should be made to complete the inventory of the tapes, and to propose a coherent organization and documentation model converging with cataloguing library standards. Once this evaluation is completed it will provide the basis for establishing a preservation plan, which can already rely on a number existing experiences and models¹⁰. Priorities should be established both regarding the preservation of the original carriers and the migration of the information¹¹. Digitisation would make possible the access to these sources, giving musicians and researchers further tools to decode the multiple levels of significance of Roberto Gerhard's work in the future. In order to achieve these goals financial support should be sought for.

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10. Preservation guidelines for audiovisual archives are provided by PrestoSpace, the European consortium for preservation of audiovisual archives <<http://prestospace.org>> Another example proposed by the Library of Congress, is intended to help libraries in projects of digital conversion of sound recordings, informing about the types of information that might be included in a statement of work for contracted services <<http://www.loc.gov/rr/mopic/avprot/audioSOW.html>>

11. According to the International Association of Sound and Audiovisual Archives (IASA), carriers considered to be inherently unstable including acetate tapes, all open reel tapes of any type, and any carrier that shows obvious signs of decay like mechanical deformation and moulds, should be copied [IASA, 2005].

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