University of Huddersfield Repository

Adkins, Monty, Duque, Carlos and Karman, Gregorio

The electronic music of Roberto Gerhard

Original Citation


This version is available at http://eprints.hud.ac.uk/id/eprint/16242/

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

• The authors, title and full bibliographic details is credited in any copy;
• A hyperlink and/or URL is included for the original metadata page; and
• The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

http://eprints.hud.ac.uk/
THE ELECTRONIC MUSIC OF ROBERTO GERHARD
Monty Adkins Carlos Duque Gregorio Karman
Centre for Research in New Music University of Huddersfield

ABSTRACT

Roberto Gerhard was a pioneer of electronic music in England creating it and sustaining a substantial concert, theatre and radio works from as early as 1954. However, for various political, cultural and personal reasons Gerhard’s electronic music has not been published or widely disseminated. Gerhard’s electronic music is one of the richest repositories for understanding the development of the composer’s late compositional technique as well as the early development of electronic music in the UK. As a result of an AHRC study of the tapes held in the Gerhard Archive at the Cambridge University Library it is possible to understand the composer’s technique and thoughts on electronic music and how they evolved as his work with magnetic tape became more and more refined.

1. INTRODUCTION

Roberto Gerhard considered himself an explorer of sound rather than someone who merely experimented with it. Central to this exploration in the final two decades of his life (1950-1970) was electronic music. In his writings from 1930, Gerhard is as prophetic regarding the future of music as Cage and Varèse were to be later in the decade. He wrote,

Adding ‘noises’ to music, on the other hand opens doors to a distinctive cinemaphonic genre [...] we should accept that there is all the immense repertoire of acoustic impressions of an ‘extra-musical’ order that attack our ears all the time, and constitutes an almost unexplored area, untested as to its aesthetic value to the musician. [1]

Although Gerhard writes in Concrete Music and Electronic Sound Composition that he approached ‘the electronic medium strictly as a sideline’ [2], the importance of this work and its impact on his instrumental composition has thus far received scant academic interest. Gerhard himself maintained that working in the electronic medium had resulted in a number of far-reaching morphological changes in the manner of composing sound and it seems to me that these changes are bound to affect methods of composition in the traditional field of instrumental composition as well. [3]

Gerhard’s approach to electronic music traversed the aesthetic paradigms that polarized early musique concrète and Électronique Musique, often using instrumental, concrete and electronic sound materials. Working very much on his own (the BBC Radiophonic Workshop was not opened until 1958, some four years after Gerhard had started working in the medium) he was critical of the mainstream avant-garde, writing that,

most of us had already noticed for some time that, whether German, Italian, Dutch or Belgian, electronic music sounds curiously alike in their timbral aspect. If the possibilities were really unlimited, one couldn’t help feeling that these composers were strangely coincident and repetitive in the use they made of them [4]

and that the sine tone has a ‘rigid, cold, dead-signal quality. It is utterly unsuited to convey anything warm, tender, vivid, alive in human experience’ [5]. Gerhard was rather interested in the transformation of acoustic sound materials, stating that ‘the microphone captures the living spark of the natural acoustic source’ [6]. Gerhard was, however, more circumspect than either Edgard Varèse or John Cage in his use of such acoustic sources. In an unpublished notebook entry from 1957 Gerhard writes that he considers that, ‘the term ‘musique concrète’ is ridiculous’ [7] and later in 1959 he wrote that,

in principle, anything that comes from an acoustic source is possible material for musique concrète. This, of course, throws the gates wide open – too wide, perhaps – to material of all sorts, musical and not so musical. The French themselves, for instance, are not above using pots and pans for their exercices aux casseroles as they describe them.” [8]

Gerhard’s approach to electronic music with its emphasis on the abstract ‘musical’ quality of concrete sounds rather than their associative meaning and the sampling and transformation of his own instrumental compositions is akin to the work of Iannis Xenakis and Bruno Maderna – two composers for whom electronic music and its techniques were to be later in the decade. He wrote,

‘work electronic music and produced significant theoretical output on their work and the new medium, Gerhard was a more practical composer. Gerhard’s experiments were carried out in the public glare initially through composing incidental music (The Prisoner (1954), King Lear (1955) and Pericles (1958) being some of his earliest such works). One of the disadvantages of not working permanently in a major radio or state-funded studio meant that there was no archival administrative structure to preserve Gerhard’s electronic works. Apart from the electronic component of the Symphony no.3, ‘Collages’ neither of the publishers of Gerhard’s instrumental music (Boosey & Hawkes and OUP) hold copies of his electronic works, or his incidental works incorporating electronics. The major repository of Gerhard’s electronic music is the archive held in the Cambridge University Library. A small number of recordings and cues of theatrical productions are held at the British Sound Archive and the Archive of the Royal Shakespeare Company.

During the 1950s and 1960s, Gerhard gathered a significant magnetic tape collection in his studio, corresponding to a major repository of historical sound recordings of his own work in which all areas of his compositional activity are represented. Following Gerhard’s death in 1970, Poldi Gerhard continued to play back the recordings, helping to identify their contents with her own annotations and comments. After her own death in February 1994, the studio was dismantled and the tapes were deposited at the Cambridge University Library with the rest of Gerhard’s archive. In 2008 the inventory of the tape collection took place, and later that year, Gerhard’s archive was donated to the Cambridge University Library.

A preliminary catalogue of Gerhard’s Tape Archive comprising 714 items was compiled by one of the authors (Karman, 2008). During this stage, the annotations on boxes and other materials found on the tape containers were documented and the general state of the collection was assessed. Difficult problems were identified including ongoing chemical degradation processes (see Fig.1), and a number of tapes were found to be incorrectly labeled or misplaced. The current research project involves to digitize all of the tapes as well as to produce a complete catalogue of the contents of the archive.

The current research project has digitized all of the tapes as well as documenting the annotations on boxes and other materials found with the tapes to produce a full catalogue of the archive. For Gerhard’s electronic works, the magnetic tape collection at the Cambridge University Library is the primary source. Over half of the tapes in the collection are directly related to Gerhard’s sound compositions [9] – the rest comprising a considerable number of recordings of his own instrumental works and a library of music by his contemporaries (including Schoenberg, Webern, Berg, Bartók, Stockhausen and Nono). Excluding one remarkable exception, the Symphony no.3 ‘Collages’ (1960) [10], most of this work remains unpublished, and in a number of cases is not available from other sources. The tapes contain all different stages of production, from initial source recordings to multilevel compound mixes [11] and completed compositions.

This in itself offers a unique perspective on Gerhard’s working methods as he left very few sketches relating to his instrumental work, preferring to destroy them and leave only the fair copy of the autograph score.

All tapes have a single gauge of ¾ inch, and comprise a variety of track formats including: full-track, mono, half-track mono, half-track stereo and quarter-track stereo. Digital transfer of the tapes involves taking care of irregular or loose winds, mechanical deterioration of tape heads, or dry splices. However, most of the tapes in the collection are in excellent playing condition.

3. GERHARD’ STUDIO

According to the International Electronic Music Catalogue (1968) compiled by Hugh Davies, the first informal activities in Gerhard’s private permanent studio are listed as having been initiated in 1954. The

1 ‘The Electronic Music of Roberto Gerhard’ funded by the Art and Humanities Research Council 2012.

2 ‘The Electronic Music of Roberto Gerhard’ funded by the Art and Humanities Research Council 2012.
THE ELECTRONIC MUSIC OF ROBERTO GERHARD

Monty Adkins  Carlos Duque  Gregorio Karman
Centre for Research in New Music
University of Huddersfield

ABSTRACT

Roberto Gerhard was a pioneer of electronic music in England creating it and securing substantial concert, theatre and radio works from as early as 1954. However, for various political, cultural and personal reasons Gerhard’s electronic music has not been published or widely disseminated. Gerhard’s electronic music is one of the richest repositories for understanding the development of the composer’s late compositional technique as well as the early development of electronic music in the UK. As a result of an AHRC study of the tapes held in the Gerhard Archive at the Cambridge University Library it is possible to understand the composer’s technique and thoughts on electronic music and how they evolved as his work with magnetic tape became more and more refined.

1. INTRODUCTION

Roberto Gerhard considered himself an explorer of sound rather than someone who merely experimented with it. Central to this exploration in the final two decades of his life (1950-1970) was electronic music. In his writings from 1930, Gerhard is as prophetic regarding the future of music as Cage and Varèse were to be later in the decade. He wrote,

Adding ‘noises’ to music, on the other hand opens doors to a distinctive cinematic genre [...] we should accept that there is all the immense repertoire of acoustic impressions of an ‘extra-musical’ order that attack our ears all the time, and constitutes an almost unexplored territory, untested as to its aesthetic value to the musician. [1]

Although Gerhard writes in Concrete Music and Electronic Sound Composition that he approached ‘the electronic means strictly as a sideline’ [2], the importance of this work and its impact on his instrumental composition has thus far received scant academic interest. Gerhard himself maintained that working in the electronic medium had resulted in a

number of far-reaching morphological changes in the manner of organizing sound and it seems to me that these changes are bound to affect methods of composition in the traditional field of instrumental composition as well. [3]

Gerhard’s approach to electronic music traversed the aesthetic paradigms that polarized early musique concrète and Électrophone Musique, often using instrumental, concrete and electronic sound materials. Working very much on his own (the BBC Radiophonic Workshop was not opened until 1958, some four years after Gerhard had started working in the medium) he was critical of the mainstream avant-garde, writing that,

most of us had already noticed for some time that, whether German, Italian, Dutch or Belgian, electronic music sounds curiously alike in its timbral aspect. If the possibilities were really unlimited, one couldn’t help feeling that these composers were strangely coincident and repetitive in the use they made of them [4]

and that the sine tone has a ‘rigid, cold, dead-signal quality. It is utterly unsuited to convey anything warm, tender, vivid, alive in human experience’ [5]. Gerhard was rather interested in the transformation of acoustic source materials, stating that ‘the microphone captures the living spark of the natural acoustic source’ [6]. Gerhard was, however, more circumspect than either Edgard Varèse or John Cage in his use of such acoustic sources. In an unpublished notebook entry from 1957 Gerhard writes that he considers that, ‘the term ‘musique concrète’ is ridiculous’ [7] and later in 1959 he wrote that, in principle, anything that comes from an acoustic source is possible material for musique concrète. This, of course, throws the gates wide open – too wide, perhaps – to material of all sorts, musical and not so musical. The French themselves, for instance, are not above using pots and pans for their exercices aux casseroles as they describe them.” [8]

Gerhard’s approach to electronic music with its emphasis on the abstract ‘musical’ quality of concrete sounds rather than their associative meaning and the sampling and transformation of his own instrumental compositions is akin to the work of Iannis Xenakis and Bruno Maderna – two composers for whom electronic music and its techniques were to play a central part in informing their compositional aesthetic. For instance, Gerhard’s use of concrete, instrumental and electronic sound sources in Audiomobile II DNA (1963) has a kinship in approach with Maderna’s La Rire (1962) which incorporates the sounds of voices, footsteps in rain, white noise and sine-tone generators, as well as transformed timpani, flute and piccolo.

2. SOURCES

Whilst Schaeffer, Stockhausen and their respective colleagues at the GRM and WDR studios propagated concert electronic music and produced significant theoretical output on their work and the new medium, Gerhard was a more practical composer. Gerhard’s experiments were carried out in the public glare initially through composing incidental music (The Prisoner (1954), King Lear (1955) and Pericles (1958) being some of his earliest such works). One of the disadvantages of not working professionally in a major radio or state-funded studio meant that there was no archival administrative structure to preserve Gerhard’s electronic works. Apart from the electronic component of the Symphony no.3, ‘Collages’ neither of the publishers of Gerhard’s instrumental music (Boosey & Hawkes and OUP) hold copies of his electronic works, or his incidental works incorporating electronics. The major repository of Gerhard’s electronic music is the archive held in the Cambridge University Library. A small number of recordings and cues of theatrical productions are held at the British Sound Archive and the Archive of the Royal Shakespeare Company.

During the 1950s and 1960s, Gerhard gained a significant magnetic tape collection in his studio, corresponding to a major repository of historical sound recordings of his own work in which all areas of his compositional activity are represented. Following Gerhard’s death in 1970, Polô Gerhard continued to play back the recordings, helping to identify their contents with her own annotations and comments. After her own death in February 1994, the studio was dismantled and the tapes were deposited at the Cambridge University Library with the rest of Gerhard’s archive. In 2008 the inventory of the tape collection took place, and later that year, Gerhard’s archive was donated to the Cambridge University Library.

A preliminary catalogue of Gerhard’s Tape Archive comprising 714 items was compiled by one of the authors (Karman, 2008). During this stage, the annotations on boxes and other materials found on the tape containers were documented and the general state of the collection was assessed. Different problems were identified including ongoing chemical degradation processes (see Fig.1), and a number of tapes were found to be incorrectly labeled or misplaced. The current research project involves digitizing all of the tapes as well as to produce a complete catalogue of the contents of the archive.

The current research project has digitized all of the tapes as well as documenting the annotations on boxes and other materials found with the tapes to produce a full catalogue of the archive.

For Gerhard’s electronic works, the magnetic tape collection at the Cambridge University Library is the primary source. Over half of the tapes in the collection are directly related to Gerhard’s sound compositions [9] – the rest comprising a considerable number of recordings of his own instrumental works and a library of music by his contemporaries (including Schoenberg, Webern, Berg, Bartok, Stockhausen and Nono). Excluding one remarkable exception, the Symphony no.3 ‘Collages’ (1960) [10], most of this work remains unpublished, and in a number of cases is not available from other sources. The tapes contain all different stages of production, from initial source recordings to multilevel compound mixes [11] and completed compositions.

This in itself offers a unique perspective on Gerhard’s working methods as he left very few sketches relating to his instrumental work, preferring to destroy them and leave only the fair copy of the autograph score.

All tapes have a single gauge of £/ inch, and comprise a variety of track formats including: full-track mono, half-track mono, quarter-track stereo. Digital transfer of the tapes involves taking care of irregular or loose winds, mechanical deterioration of tape heads, or dry spills. However, most of the tapes in the collection are in excellent playing condition.

3. GERHARD’ STUDIO

According to the International Electronic Music Catalogue (1968) compiled by Hugh Davies, the first informal activities in Gerhard’s private permanent studio are listed as having been initiated in 1954. The

1 ‘The Electronic Music of Roberto Gerhard’ funded by the Art and Humanities Research Council 2012.

2 ‘The Electronic Music of Roberto Gerhard’ funded by the Art and Humanities Research Council 2012.
and Fig.3) [15] supplies further information about the A closer investigation of these photographs (see Fig.2 Although Gerhard maintained that tape splices fixed on hooks to the lid of the grand open-reel tape recorders, together with numerous to Homs' visit, present varied perspectives of four Gerhard at his workplace [13], perhaps simultaneous Cambridge in September 1959 and provides a first-hand impression of the studio one year after the Gerhard’s move to Madingley Road: The study was ample and, at the back, near the window that lead to the garden, there was a grand piano. [...] By now Gerhard had constructed an electronic laboratory [...] with the aid of the Radiophonic Workshop, and it was full of tape-loops of concrete music [12].

A series of undated black and white portraits of Gerhard at his workplace [13], perhaps simultaneous to Homs' visit [15], presents varied perspectives of four open-reel tape recorders, together with numerous reels on shelves and an unusual image of hundreds of tape splices fixed on hooks to the lid of the grand piano (see Fig.2).

Although Gerhard maintained that I’ve always been working with shoe-string equipment in electronics. It comprises: one microphone, five tape recorders, a track mixer of five channels, and that is all. I’ve never used oscillators or white noise generators. I’m allergic to sine tones. When I needed certain types of white noise, the BBC Radiophonic Workshop has kindly provided lengths of tape. I would have been happy to have been able to install envelope control. I could not afford it. But I have been able to develop some measure of envelope modification by a manual means. I have no visual or audio monitoring. I wish I could have had some modulators. No automatic switching devices. On occasion their absence has been very trying. [14]

A closer investigation of these photographs (see Fig.2 and Fig.3) [15] supplies further information about the recording equipment in Gerhard’s studio c.1958-59.

There were two EMI TR50 mono recorders, an early Vortexion WA1 mono recorder and a Ferrograph Series 66 mono recorder. In the early 1960s, Gerhard incorporated a new Ferrograph Series 4B mono recorder and a five-channel mixer into his studio. It would not have been uncommon to find a similar set of open-reel tape recorders in the facilities of the BBC [16].

With this in mind, and though Gerhard was eager to underline the modest equipment with which he worked in the ‘Home Office’, it would be better to characterize his studio as one that contained some of the best commercially available equipment at the time.

4. BBC RADIOPHONIC WORKSHOP

For Gerhard, his contact with the BBC Radiophonic Workshop, was vital and the only external support he had for his work. It opened on 1 April, 1958 some four years after Gerhard had started work in the medium; the technicians working in Room 13 at Maida Vale (Radiophonic Workshop headquarters) included, among others: Daphne Oram (who resigned in January 1959, after 15 years with the BBC, to follow a career as a composer); Delia Derbyshire (who joined the BBC in 1960 and collaborated with Gerhard on his 1965 Prix Italia winning Anger of Achilles) and Dick Mills (who assisted with producing and mixing Gerhard’s work, particularly the Symphony no.3 ‘Collages’) at the Royal Albert Hall and also the Royal Festival Hall). When the Radiophonic Workshop opened, an invitation was sent out to numerous composers to come and see the new facilities with a view to discussing the possibilities for composition opened up by the studio. A programmer from Gerhard, only two other composers accepted the invitation. Peter Manning writes,

The ‘closed door’ policy of the BBC Radiophonic Workshop, and the continuing lack of support from other quarters, severely retarded developments in Britain during the 1960s. Indeed, Roberto Gerhard was the only established composer from the broader community to be granted reasonable access to the BBC facilities during the decade. This permitted him to produce a number of pieces, primarily for radio, working both at the BBC and at his own private studio in Cambridge [17].

The years 1958-1965 were the most productive regarding Gerhard’s electronic music output. It is perhaps because of the regular commissions (The Unexpected Country (1957), Asylum Diary (1959), The Composer's Dream (1963-64)) that Gerhard received from the BBC for music for radio plays and the William Glock’s admiration of Gerhard’s work that allowed him to work in his home studio and in the BBC Studio with great flexibility.

5. GERHARD’S ELECTRONIC MUSIC

Hugh Davies, in his 1981 Tempo article on Gerhard’s electronic music wrote that,

Gerhard was not only the first British composer to adopt electronic music techniques; it seems probable that he was, by a few months, the creator of the first British score to involve tape [18].

Gerhard’s pioneering achievements can be put in a broader, less localized, perspective. The first musique concrete work, the Œuvre aux chemins de fer, was produced by Pierre Schaeffer in 1948 at the Club d’Essai, RTF (later INA-GRM). In 1950 Schaeffer and his then assistant Pierre Henry produced their first substantial work in the genre: the collaborative Symphonie pour un homme seul. The NWDR studio opened in 1953, where Stockhausen produced his first experiments with Elektronische Musik, the Studie I & II (1953 and 1954). The first acknowledge work that combined instruments and electronic sounds was Madonna’s Musica in due dimensioni produced in Bonn, in 1952 for flute, cymbal and electronic tape. One of the most famous early works incorporating electronics was Varèse’s Deserts (1954) for ensemble and tape. Varèse’s work alternates rather than integrates the instruments and electronics, having three tape ‘interpolations’. It was in the same year, 1954, that Gerhard completed his first ensemble and tape work, the incidental music for Bridget Boland’s play, The Prisoner.

Gerhard was well aware of the techniques of electronic music on the continent: transposition, looping and layering of sounds, cutting and splicing to create rhythms or dynamic envelopes, feedback, filters and ring modulators, were thoroughly described in a special number of the technical magazine of the Nordwestdeutschen Rundfunk devoted to the Cologne Studio for Electronic Music [19], part of the composer’s book collection along with other seminal texts relating to the early days of electronic music by composers such as Pierre Schaeffer, Karlheinz Stockhausen and Milton Babbitt. While always suspicious of studios operated by sound technicians, Gerhard, on occasion regretted his lack of more sophisticated devices, envelope controllers and modulators. It is therefore not surprising that one of his favourite resources was the use of transposition (see Table 1).

Although Gerhard wrote that he was primarily interested in ‘applied music for ‘applied works… to works of radio and television, for the stage and screen’ completing twelve substantial scores for ensemble or orchestra and tape between 1954 and 1964 for BBC Radio productions or for theatre, he produced a number of works with or for electronics not intended as incidental music.

---

* It should be noted that Gerhard often annotated his tape boxes 7” rather than 7½” i.p.s.
A closer investigation of these photographs (see Fig.2) supplies further information about the recording equipment in Gerhard's studio c.1958-59.

Although Gerhard maintained that I've always been working with shoe-string equipment in electronics. It comprises: one microphone, five tape recorders, a track mixer of five channels, and that is all. I've never used oscillators or white noise generators. I'm allergic to sine tones. When I needed certain types of white noise, the BBC Radiophonic Workshop has kindly provided lengths of tape. I would have been happy to have been able to install envelope control. I could not afford it. But I have been able to develop some measure of envelope modification by a manual means. I have no visual or audio monitoring. I wish I could have had some modulators. No automatic switching devices. On occasion their absence has been very trying. [14]

A series of undated black and white portraits of Gerhard at his workplace [13], perhaps simultaneous to Hom's visit, present varied perspectives of four open-reel tape recorders, together with numerous reels on shelves and an unusual image of hundreds of tape splices fixed on hooks to the lid of the grand piano (see Fig.2).

There were two EMI TR50 mono recorders, an early Vortexion WVA'1 mono recorder and a Ferrograph Series 66 mono recorder. In the early 1960s, Gerhard incorporated a new Ferrograph Series 48 mono recorder and a five-channel mixer into his studio. It would not have been uncommon to find a similar set of open-reel tape recorders in the facilities of the BBC [16].

With this in mind, and though Gerhard was eager to underline the modest equipment with which he worked in the 'Home Office', it would be better to characterize his studio as one that contained some of the best commercially available equipment at the time.

For Gerhard, his contact with the BBC Radiophonic Workshop, was vital and the only external support he had for his work. It opened on 1 April, 1958 some four years after Gerhard had started work in the medium; the technicians working in Room 13 at Maida Vale (Radiophonic Workshop headquarters) included, among others: Daphne Oram (who resigned in January 1959, after 15 years with the BBC, to follow a career as a composer); Delia Derbyshire (who joined the BBC in 1960 and collaborated with Gerhard on his 1965 Prix Italia winning Anger of Achilles) and Dick Mills (who assisted with producing electronic music during Gerhard's work (particularly the Symphony no. 3 'Collages') at the Royal Albert Hall and also the Royal Festival Hall). When the Radiophonic Workshop opened, an invitation was sent out to numerous composers to come and see the new facilities with a view to discussing the possibilities for composition opened up by the studio. Apart from Gerhard, only two other composers accepted the invitation. Peter Manning writes,

The 'closed door' policy of the BBC Radiophonic Workshop, and the continuing lack of support from other quarters, severely retarded developments in Britain during the 1960s. Indeed, Roberto Gerhard was the only established composer from the broader community to be granted reasonable access to the BBC facilities during the decade. This permitted him to produce a number of pieces, primarily for radio, working both at the BBC and at his own private studio in Cambridge [17].

The years 1958-1965 were the most productive regarding Gerhard’s electronic music output. It is perhaps because of the regular commissions (The Unexpected Country (1957), Asylum Diary (1959), The Course of True Love (1960), The Anger of Achilles (1963-64) that Gerhard received from the BBC for music for radio plays and the William Glock’s admiration of Gerhard’s work that allowed him to work in his home studio and in the BBC Studio with great flexibility.

5. GERHARD’S ELECTRONIC MUSIC

Hugh Davies, in his 1981 Tempo article on Gerhard’s electronic music wrote that,

Gerhard was not only the first British composer to adopt electronic music techniques; it seems probable that he was, by a few months, the creator of the first British score to involve tape [18].

Gerhard’s pioneering achievements can be put in a broader, less localized, perspective. The first musique concrète work, l’Étude aux chemins de fer, was produced by Pierre Schaeffer in 1948 at the Club d’Essai, RTF (later INA-GRM). In 1950 Schaeffer and his then assistant Pierre Henry produced their first substantial work in the genre: the collaborative Symphonie pour un homme seul. The NWDR studio opened in 1953, where Stockhausen produced his first experiments with Elektronische Musik, the Studie I & II (1953 and 1954). The first acknowledged work that combined instruments and electronic sounds was Maxxmeuron’s Musica in due dimensioni produced in Bonn, in 1952 for flute, cymbal and electronic tape. One of the most famous early works incorporating electronics was Varèse’s Déserts (1954) for ensemble and tape. Varèse’s work alternates rather than integrates the instruments and electronics, having three tape ‘interpolations’. It was in the same year, 1954, that Gerhard completed his first ensemble and tape work, the incidental music for Bridget Boland’s play, The Prisoner.

Gerhard was well aware of the techniques of electronic music on the continent: transposition, looping and layering of sounds, cutting and splicing to create rhythms or dynamic envelopes, feedback, filters and ring modulators, were thoroughly described in a special number of the technical magazine of the Nordwestdeutschen Rundfunk devoted to the Cologne Studio for Electronic Music [19], part of the composer’s book collection along with other seminal texts relating to the early days of electronic music by composers such as Pierre Schaeffer, Karlheinz Stockhausen and Milton Babbitt. While always suspicious of studios operated by sound technicians, Gerhard, on occasion regretted his lack of more sophisticated devices, envelope controllers and modulators. It is therefore not surprising that one of his favourite resources was the use of transposition (see Table 1).

Although Gerhard wrote that he was primarily interested in 'applied' or 'applied arts' to electronic music for 'applied works... to works of radio and television, for the stage and screen' completing twelve substantial scores for ensemble or orchestra and tape between 1954 and 1964 for BBC Radio productions or for theatre, he produced a number of works with or for electronics not intended as incidental music.
Gerhard’s electronic works for concert include the Audiomobiles series of works (1958-63), the second of which became the soundtrack for Hans Boye and Anund Sarabia’s film DNA in Reflection (1963); Lament for the Death of a Bullfighter, for speaker and tape (1955); Symphony no.3, ‘Collages’ for orchestra and tape (1960); Caligula (1961), the projected Sculptures series (1963) utilising sounds recorded from a sculpture by John Youngman (only one work in this cycle was completed although there are multiple tapes that contain substantial compound mixes), and the epic, though unfinished Vox Humana (1966-67). The Ten Pieces for tape are extracts from Audiomobiles II: DNA in Reflection. The last work in this category is a live electronic work entitled Claustrophilia – a page to John Cage (1966) scored for eight harps (or as many multiples of four as available) and four backstage radio sets, tuned to different wavelengths, monitors backstage and loudspeakers [20].

The Audiomobiles series and projected Sculptures I-V are Gerhard’s most abstract electronic works. These works were not commissioned and therefore provide the testimony of Gerhard’s most extreme exploration of the new medium of magnetic tape. As such, they also provide the most confusion regarding Gerhard’s intentions and which works were actually completed. Although Gerhard’s work list officially listed as Audiomobiles I is completed. It is the authors’ belief that Gerhard having recorded and processed the sounds of John Youngman’s metal sculpture realized that their sonic potential was considerable. Therefore, having originally intended the material merely to be used for the next in the series of Audiomobiles works decided rather to create a new cycle of works based solely on Youngman’s sculpture.

In private letters to Davies, Gerhard indicates that he has ‘…an accumulation of work in a state of near-readiness, I mean ready for com-po-si-tion, namely ca 25 to 30 7” reels of multilevel compounds classified as “good”’ [21]. One such example is tape CUL_OR01_016101 on the box of which Gerhard has written ‘very good bits of electronic music’ and contains twenty four minutes of highly developed (almost) continuous electronic music derived from the Youngman sculpture.

Although neither the Audiomobiles nor Sculptures series of works were completed it is clear from the amount of working material in the tape archive that Gerhard was not dissatisfied with the results he obtained from working and processing sounds for the works. It was merely that his time for the final editing and montage of the works was limited. As none of Gerhard’s electronic concert works were commissioned, one scenario is that the pressure of time to complete time-consuming works for tape that were not commissioned and therefore provide the testimony of Gerhard’s most extreme exploration of the new medium of magnetic tape. As such, they also provide the most confusion regarding Gerhard’s intentions and which works were actually completed. Although Gerhard’s work list officially contained an entry for Audiomobiles I, from preliminary study of the archive it appears that only three were completed. Audiomobiles I was completed in 1958. The second in the series was composed for the film DNA in Reflection in 1963. A third Audiomobiles appears in the tape catalogue often listed as Audiomobiles I ‘Sculpure’. It is the authors’ belief that Gerhard having recorded and processed the sounds of John Youngman’s metal sculpture realized that their sonic potential was considerable. Therefore, having originally intended the material merely to be used for the next in the series of Audiomobiles works decided rather to create a new cycle of works based solely on Youngman’s sculpture.

Gerhard’s working processes are fairly well documented in his notebooks. They contain numerous annotations of source materials and comments on these. For Gerhard, the first step toward creating a sound composition was to gather a repertoire of raw materials on tape. This process is described in his paper ‘The Sound Source – or Audio Research’ [22] for the incidental music to King Lear (1955), which contains detailed instructions for recording a catalogue of instrumental sounds using different dynamics and modes of attack, including: maracas, cymbals, xylophone, turkish cymbal, tam-tam, piano, chromatic timpani, bass drum, gong and Vibra. In his studio, Gerhard had a microphone available for making recordings of piano effects - or smaller percussion instruments. But the sound materials he utilized were by no means limited to instrumental sources. Production notes reveal the regular use of daily objects for making sounds (popping paper, paper tissue, combination of objects, abstractions), as well as a wide range of incidental noises (birds, dogs, axe strokes, cracking tree, thunder, wind, rain and storm, whispering gusts, crowds, chatter, laughter, screams), which could be home-made 10 or taken from the everyday environment. In his notebooks, Gerhard writes, ‘I have only got to start in the same way: by building up a repertoire of sounds which are stored on tape. …[T]he sounds selected may either be appropriate in their original form to the sound-picture one has in mind or else require further treatment before being used. Most of my stored sounds are of instrumental origin, recorded on tape through microphone. The next step – what I called my second stage – is directed towards a certain transformation of that original sound, ideally towards a metamorphosis of the sound [in] which its origins are blurred, and a far-reaching change of identity might be achieved.’ [23]

Gerhard’s methods for obtaining such source materials for his compositions are documented by Lindsay Anderson and Dick Mills. Anderson writes, I remember visiting Roberto in Cambridge, talking about the score, and even assisting him in throwing various objects down the stairs, in an effort to produce the right kind of abstract sounds which he felt he needed. [24]

Dick Mills, who worked at the BBC Radiophonic Workshop describes recording sessions in which Poldi Gerhard was fond of participating too, writing that:

Roberto had a rather difficult problem to overcome when attempting to record his basic sounds, as he lived on a busy trunk road in Cambridgeshire and the only quiet period was around 3:30 in the morning. One can imagine the scene as Roberto twanged and banged and bonged metallic objects as his wife Poldi acted as recording engineer. Both of them were in their sixties at that time. [25]

Aside from sound sources recorded in his own studio, Gerhard also recycled fragments of recordings of his own instrumental works. Where the materials he needed could not be easily recording or created in his own studio Gerhard would resort to commercial mixing of three disks on three turntables at different speeds and applying simultaneous glissandi to the recordings. In his notebooks, Gerhard used capital letters to identify the sound patterns that resulted from the combination of multiple sources in such

10 For example, the tape labelled ‘Roberto working on piano strings for incidental music’ [CUL_OR01_005501] would be a document of those experiments, with similar recordings to those described in King Lear’s sound score (low piano strings: pluck, rub with wire brushes, comb, roll with timpani sticks). [Gerhard.7.162].

11 For example, the labelling ‘Rain and storm home produced by Roberto’ [CUL_OR01_039101]
Gerhard’s electronic works for concert include the Audiomobiles series of works (1958–63), the second of which became the soundtrack for Hans Boye and Anand Sarabhai’s film DNA in Reflection (1963); Lament for the Death of a Bullfighter, for speaker and tape (1959); Symphony no.3, ‘Collages’ for orchestra and tape (1960); Caligula (1961), the projected Sculptures series (1963) utilising sounds recorded from a sculpture by John Youngman (only one work in this cycle was completed although there are multiple tapes that contain substantial compound mixes), and the epic, though unfinished Symphony no.4, for orchestra and tape (1960); Symphony no.3, ‘Collages’, for tape and orchestra (1959); and Anand Sarabhai’s film Llanto por Ignacio Sánchez Mejías (1963). The second in the series was composed for the film in 1958. The second in the series is a live electronic work entitled Claustrophilia – a page to John Cage (1966) scored for orchestra (or as many multiples of four as available) and four backstage radio sets, tuned to different wavelengths, monitors backstage and loudspeakers [20].

The Audiomobiles series and projected Sculptures I–V are Gerhard’s most abstract electronic works. These works were not commissioned and therefore provide the listener with Gerhard’s most extreme exploration of the new medium of magnetic tape. As such, they also provide the most confusion regarding Gerhard’s intentions and which works were actually completed. Although Gerhard’s work list officially contains an entry for Audiomobiles I–IV, from preliminary study of the archive it appears that only three were completed. Audiomobiles I was completed in 1958. The second in the series was composed for the film DNA in Reflection in 1963. A third Audiomobiles appears in the tape catalogue often listed as Audiomobiles 3 ‘Sculpiure’. It is the authors’ belief that Gerhard having recorded and processed the sounds of John Youngman’s metal sculpture realized that their sonic potential was considerable. Therefore, having originally intended the material merely to be used for the next in the series of Audiomobiles works decided rather to create a new cycle of works based solely on Youngman’s sculpture. In private letters to Davies, Gerhard indicates that he has ‘...an accumulation of work in a state of near-readiness, I mean ready for compositional stages and his own terminology for such sound materials is not a lack of interest in making use of the sounds. Gerhard was not dissatisfied with the results he obtained from working and processing sounds for the works. It was merely that he had time for his final editing and montage of the works was limited. As none of Gerhard’s electronic concert works were commissioned, one scenario is that the pressure of increasingly prominent commissions was too much in his case for the Concerto for Orchestra (1965), Epithalamium (1966), Symphony no.4 (1967), Leo (1969) and the unfinished Symphony no.5 (1969) there was little time to complete time-consuming works for tape that carried little financial reward.

6. SOUND COMPOSITION

Gerhard’s working processes are fairly well documented in his notebooks. They contain numerous annotations of source materials and comments on these. For Gerhard, the first step toward creating a sound composition was to gather a repertoire of raw materials on tape. This process is described in ff. 1–10 of the sound score [22] for the incidental music to King Lear (1955), which contains detailed instructions for recording a catalogue of instrumental sounds using different dynamics and modes of attack, including: maracas, cymbals, xylophone, turkish cymbal, tam-tam, piano, chromatic timpani, bass drum, gong and mbira. In his studio, Gerhard had a microphone available for making recordings of piano effects9 – or smaller percussion instruments. But the sound materials he utilized were by no means limited to instrumental sources. Production notes reveal the regular use of daily objects for making sounds (packing paper, paper tissue, clothing, abrading) as well as a wide range of incidental noises (birds, dogs, axe strokes, cracking tree, thunder, wind, rain and storm, whipping gusts, crowds, chattering, laughter, screams), which could be home-made10 or taken from the everyday environment. In his notebooks, Gerhard writes, ‘...we all have got to start in the same way: by building up a repertoire of sounds which are stored on tape. [...] The sounds selected may either be appropriate in their original form to the sound-picture one has in mind or else require further treatment before being used. Most of my stored sounds are of instrumental origin, recorded on tape through microphone. The next step – what I called my second stage – is directed towards a certain transformation of that original sound, ideally towards a metamorphosis of the sound [in which] its origin are blurred, and a far-reaching change of identity might be achieved. [23]

Gerhard’s methods for obtaining such source materials for his compositions are documented by Lindsay Anderson and Dick Mills. Anderson writes, ‘I remember visiting Roberto in Cambridge, talking about the score, and even assisting him in throwing various objects down the stairs, in an effort to produce the right kind of abstract sounds which he felt he needed. [24]

Dick Mills, who worked at the BBC Radiophonic Workshop describes recording sessions in which Poldi Gerhard was fond of participating too, writing that:

Roberto had a rather difficult problem to overcome when attempting to record his basic sounds, as he lived on a busy trunk road in Cambridgeshire and the only quiet period was around 3:30 in the morning. One can imagine the scene as Roberto twanged and banged and bonked metallic objects as his wife Poldi acted as recording engineer. Both of them were in their sixties at that time. [25]

Aside from sound sources recorded in his own studio, Gerhard also recycled fragments of recordings of his own instrumental works. Where the materials he needed could not be easily recorded or created in his own studio Gerhard would resort to commercial sound catalogues or to outsourcing the recordings to a professional facility when a wider palette of instrumental sounds was required. One such example is the music for the Royal Shakespeare Company’s performance of Pericles (1958) for which Gerhard produced the incidental music for ensemble and electronics. The box of tape CUL.OR01_02540112 credits ‘Studio Black, Queens Way’ for the recording of percussion and exotic instruments. The multiplicity of sources that Gerhard obtained from his current project. The format is CUL Cambridge University Library). CUL.OR01 (top reel collection no.1) 0254 (item no.254) 81 (first spool – there are boxes with up to four small spools in)

9 They are listed in the Bowen catalogue as composed in 1961. However they are extracts from a work completed in 1963 and released on Electronic Music, by Roberto Gerhard, (Southern Library of Recorded Music, MQ 760) in 1964.

10 For example, the tape labelled ‘Roberto working on piano strings for incidental music’ CUL.OR01 0055011 would be a document of those experiments, with similar recordings to those described in King Lear’s sound score (low piano strings: pluck, rub with tine brushes, comb, roll with tine brushes). (Gerhard.7162).

11 For example, the labelling ‘Rain and storm home produced by Roberto’ CUL.OR01 039101
For Gerhard, the final part of the composition process was the ‘sound-montage’ – the assembling, editing and juxtaposition of ‘compound mixes’. Gerhard considered the sound-montage ‘something of a game; something like a jigsaw puzzle with pieces upside-down or the wrong way around, bumping into one another and thus emphasizing their isolation, rather than giving them a common purpose which would lift them onto a plane of poetic imagery’ [28]. Gerhard was not the type of personality to consider any composition a ‘game’. What we can infer from this statement is the intuitive freedom that working in the electronic medium gave Gerhard – an immediate tactility of working with, and transforming, sound. Here a further comparison with Maderna may be useful: ‘The electronic medium, in effect, makes the operative work in behaviour, it will be noticed, not colour, sound and space composition of 1959’ in BOWEN, M., (ed.), (2000) Gerhard on music: selected writings, Aldershot, Ashgate, pp.79-80

[3] Ibid. p.2p.180
[4] Ibid. p.2p.183
[5] Ibid. p.2p.183
[7] Gerhard Symphony no.4 bb.115f.120
[8] Ibid. p.2p.184

[10] The Symphony no.3 ‘Collages’, of which at least three commercial recordings are currently available: HMV ASD 2427, (1967); Montaigne Auvidis MO 782103, (1997); Chandos Records 1013104, (1997).
[11] Using Gerhard’s own terminology, he nevertheless moved away from the ‘note’ as the essential unit, to his own notion of the sound object or sound-field as building blocks for his works. This is particularly evident in the Symphony no.4 ‘New York’ (1966). Examples in the Symphony no.4 are the ‘structural chords’ and Gerhard’s use of percussion.

They are always marked ff or sff, a large brass group (15 musicians) generating a wall of sound. In line with thinking in fields of sound-activity the electronic works are driven by gesture and texture-led sound. Although Gerhard did not care for Schaeffer’s term for the basic perceptual unit in musique concrète, the objet sonore, it is clear that in his electronic works and increasingly in his later instrumental works, he would later term spectromorphology [31] – literally the shaping of sound through time. In line with thinking in fields of sound-activity the electronic works are driven by gesture and texture-led sound. Although Gerhard did not care for Schaeffer’s term for the basic perceptual unit in musique concrète, the objet sonore, it is clear that in his electronic works and increasingly in his later instrumental works, he would nevertheless moved away from the ‘note’ as the essential unit, to his own notion of the sound object or sound-field as building blocks for his works. This is particularly evident in the Symphony no.4 ‘New York’ (1966). Examples in the Symphony no.4 are the ‘structural chords’ and Gerhard’s use of percussion. The structural chords are played in the brass and are used to articulate the course of the work, in particular the transition from one texture to another and cadential points at the end of sections, for instance in bb.14-15 (Figure 6).
processes as that outlined above. Such processes enabled Gerhard to mix sources at fixed or variable loudness to obtain more articulated sound images, and successively build up several strands up to ‘multilevel compounds’ ready for editing in the final composition. In his notebook Gerhard writes lists of the elements that make up these strands (Figure 5), would later term spectromorphology [31] — literally the shaping of sound through time. In line with thinking in fields of sound-activity the electronic works are driven by gesture and texture. In [32]. Although Gerhard did not care for Schaeffer’s term for the basic perceptual unit in musique concrète, the objet sonore, it is clear in his electronic works and increasingly in his later instrumental works, he nevertheless moved away from the ‘note’ as the essential unit, to his own notion of the sound object or sound field as building blocks for his works. This is particularly evident in the Symphony no 4 ‘New York’ (1966). Experiences in the Symphony no 4 are the ‘structural chords’ and Gerhard’s use of percussion. The structural chords are played in the brass and are used to articulate the structure of the work, in particular the transition from one texture to another and cadential points at the end of sections, for instance in bb.14-15 (Figure 6). They are always marked ff or sff, a large brass group (15 musicians) generating a very deep sonority. In Gerhard’s electronic music, there are also such structural sounds, used to separate textures, differing timbres and for articulating new sections. Such examples occur at the beginning of Audiomobils II: DNA in Reflection and parts of Vox Humana. In the Symphony no 4 Gerhard often uses four cymbals playing simultaneously to emulate electronic sounds. Figure 7 creates a ‘noise’ crescendo similar gestures developed from white noise in Coligula and Audiomobils II. Later in the work (bb.485-486 – Figure 8) Gerhard creates a similarly striking sound by drawing screw-rods over suspended cymbals indicating that

For the crescendo-fortissimo effect, start drawing the rod quietly across the edge of the cymbal, at a small gradient to the surface; then quickly increase the gradient and finish with a swift stroke and considerable pressure. [12]

Fig.5 Gerhard 7.115 f.45i

For Gerhard, the final part of the composition process was the ‘sound-montage’ – the assembling, editing and juxtaposition of ‘compound mixes’. Gerhard considered the sound-montage ‘something of a game; something like a jigsaw puzzle with pieces upside-down or the wrong way around, bumping into one another and thus emphasizing their isolation, rather than giving them a common purpose which would lift them onto a plane of poetic imagery’ [28]. Gerhard was not the type of personality to consider any composition a ‘game’. What we can infer from this statement is the intuitive freedom that working in the electronic medium gave Gerhard – an immediate tactility of working with, and transforming, sound. Here a further comparison with Maderna may be drawn. About electronic music, Maderna once said, ‘we no longer listen in linear time – our thinking in fields of sound-activity the electronic medium makes Maderna trust in his compositional intuition. The influence of electronic music in Maderna’s instrumental composition can be found in works such as the Serenade. Gerhard himself wrote that ‘the way time is felt in electronic music differs entirely from the way time is experienced in traditional music.’ Gerhard was adamant that there is a fundamental difference between working with electronics and instruments. He uses the term sound-behaviour to characterise this difference. Gerhard writes, the operative work is behaviour, it will be noticed, not colour; colour is never of decisive importance. Instead of ‘behaviour’ I might have used the term sound-activity. The electronic medium, in effect, makes possible new modes of action with sound which have greater freedom of tonal movement, of configuration and of textual weaving than those which our traditional instruments permit. [30] Gerhard’s notion of sound-behaviour bears a close conceptual resemblance to what Denis Smalley

7. CONCLUSION

The present study of Gerhard’s electronic works and writings aims to contextualize Gerhard’s pioneering work in developing a catalogue of early electronic music. His work from the 1950s not only pre-dates the establishment of the BBC Radiophonic Workshop but also predates the later work of Peter Zanovier, Tristram Cary, Hugh Davies, Tim Souster and the subsequent rise of the ‘home studio’ in England. As such, Gerhard’s work provides a unique insight into the development of electronic music in England and offers a critique of the French and German schools of musique concrète and Électronique Musik. The tape archive at the Cambridge University Library contains the work of a dynamic and original composer. One who was at the forefront of the exploration of the new medium of electronic music and one who deserves to be recognized as such.

8. REFERENCES

[5] Ibid p.183
[6] Ibid p.183