

PhD thesis

The work of Hugh Davies in the context of experimental electronic music in Britain

Palermo, F.

—

Full bibliographic citation: Palermo, F. 2015. The work of Hugh Davies in the context of experimental electronic music in Britain. PhD thesis Middlesex University

Year: 2015

Publisher: Middlesex University Research Repository

Available online: https://repository.mdx.ac.uk/item/85vw1

—

Middlesex University Research Repository makes the University's research available electronically.

Copyright and moral rights to this work are retained by the author and/or other copyright owners unless otherwise stated. The work is supplied on the understanding that any use for commercial gain is strictly forbidden. A copy may be downloaded for personal, non-commercial, research or study without prior permission and without charge.

Works, including theses and research projects, may not be reproduced in any format or medium, or extensive quotations taken from them, or their content changed in any way, without first obtaining permission in writing from the copyright holder(s). They may not be sold or exploited commercially in any format or medium without the prior written permission of the copyright holder(s).

Full bibliographic details must be given when referring to, or quoting from full items including the author's name, the title of the work, publication details where relevant

(place, publisher, date), pagination, and for theses or dissertations the awarding institution, the degree type awarded, and the date of the award.

If you believe that any material held in the repository infringes copyright law, please contact the Repository Team at Middlesex University via the following email address: repository@mdx.ac.uk

The item will be removed from the repository while any claim is being investigated.

See also repository copyright: re-use policy: https://libguides.mdx.ac.uk/repository

The Work of Hugh Davies in the Context of Experimental Electronic Music in Britain.

A thesis submitted to Middlesex University

in partial fulfilment of the requirements for the degree of Doctor of Philosophy

Settimio Fiorenzo Palermo

School of Media and Performing Arts

Middlesex University

February 2015

Abstract.

The importance of the work by the British composer, performer, inventor of new musical instruments, and musicologist Hugh Davies (1943-2005) has yet to be fully acknowledged. Despite being a central figure in British music outside the conventions of the concert hall, no comprehensive study of his oeuvre has been carried out before. The idiosyncratic nature and radicalism of his work undoubtedly cast him as an 'outsider', but can a broader conceptual framework with which to assess his output be identified? What was the aesthetic philosophy on which Davies's musical project rested? How did his work mediate its context?

This research represents an attempt at answering these questions. First of all it gathers, categorises, and evaluates information on Davies's larger body of work and activities. Indeed Davies engaged in many different forms of music making: he composed serial works and wrote music theatre pieces; he invented new musical instruments and improvised on them; he devised gallery installations and environmental projects. At the same time Davies pursued a number of significant activities such as the publishing of a world catalogue of experimental and electronic music and the setting up of the first permanent electronic music studio at a British university. He was also an assistant to the German composer Karlheinz Stockhausen (1928-2007), an experience that had a profound effect on his development. Davies's musical output as well as his related research and pioneering work will be given due attention here in order to build a comprehensive and critical account of Davies's achievements and the context in which they took place.

This thesis suggests that all the diverse pursuits in which Davies was engaged have been part of the same artistic discourse, and therefore can be logically connected in their

genesis and development. The chosen framework to make sense of Davies's heterogeneous practice is that of 'experimental electronic music', and its defining principles are applied even when the pieces examined feature no electronic technology at all. The experimental ethos and the impact of electronic technology are thus construed as the foundation of Davies's production.

This research casts light on Davies's work and on his fundamental role in the context of experimental and electronic music in Britain, and calls not only for a more informed appraisal of Davies's oeuvre but also for a more accurate account of twentieth century British music history.

Acknowledgements.

The accomplishment of this work rests on the support and encouragement that I have been fortunate enough to enjoy during my studies.

First of all I thank my family who has enabled me to pursue my interests and education. My father Giuseppe, mother Carmela, sister Rossella, brother-in-law Stefano, and my young nieces Azzurra and Alice have been a source of strength over the years. I also thank my friends, and in particular Dr. Kevin Inston and Dr. Amjad Shah, who have demonstrated continued empathy with my journey and thus helped me sustain it.

I am greatly indebted to my Director of Studies Dr. John Dack for his guidance, which was necessary to complete this work, and for providing me with a role model in pursuing an academic career. My supervisor Dr. Mine Doğantan-Dack has contributed significantly to this work, offering invaluable insight and expertise – it was a great pleasure to work with her.

My research was mainly carried out on the Hugh Davies archive at the British Library in London, where I have worked in particular with the Curators of Music Dr. Nicolas Bell and Jonathan Summers. Nicolas and Jonathan facilited my research, created a comfortable work environment, and gave me an extremely fruitful opportunity to disseminate this work by inviting me to contribute to the Sound Cases series. The Saga Trust's generosity was also instrumental in allowing me to complete the cataloguing of the Hugh Davies collection, which is now available to the wider academic community through the British Library reading rooms and online services.

At the Science Museum, Dr. Tim Boon, Head of Research and Public History, and Merel van der Vaart, former Associate Curator of Public History, were very helpful in allowing me to access the resources available there on Hugh Davies.

I am grateful to Middlesex University for creating the conditions in which my studies could progress. In particular Dr. Stephen Boyd Davies, the former director of the Lansdown Centre for Electronic Arts (LCEA), where I was initially based, granted the funding of many important international trips to conferences. I also much appreciated the contribution made by the Art and Design Research Institute (ADRI) towards a trip to participate in the American Musicological Society annual conference in New Orleans, Louisiana and towards the realisation of the *SHO-ZYG* exhibition at Goldsmiths College in London, in which I was a co-curator.

Dr. Peter Fribbins, Head of Music at Middlesex University, was extremely encouraging in offering the opportunity to present my work in lectures and seminars, as well as permitting my broader academic and personal development. Dr. Christopher Dromey, Dr. Brian Inglis, and Dr. François Evans at the Department of Media and Performing Arts at Middlesex University have been always supportive of my studies, and I am undoubtedly lucky to have them as colleagues. My students at Middlesex University have also been a tremendous source of inspiration: Kelly Wells, Sian Evans, Lara Black, and Helena Gandra in particular, have given me an example of the commitment necessary in research and it was a great learning experience for me to supervise their individual final dissertations.

I also owe a special recognition to James Bulley, Tom Richards, and Kathrine Sandys at Goldsmiths College as they made possible my work at the *SHO-ZYG* exhibition. James invited me to participate in the exhibition, where I was able to translate my research in a different form, capable of engaging a wider audience. James's leadership in this project was outstanding. Tom Richards also read various drafts of my writing about the work of Daphne Oram, offering very valuable suggestions on how to improve it. Jo Hutton at the Daphne Oram Trust has also provided extremely informative comments on such

topic. Furthermore, the Daphne Oram Trust has kindly supplied the photographs of Daphne Oram and the Oramics included here.

Over the years I have talked to many composers and performers who have generously given their time to share their story. In particular I shall always treasure the memories of spending an afternoon with Henri Chopin at his house in Norfolk. Also Steve Jones, Howard Skempton, Michael Parsons, Sangeet Gellhorn, Max Eastley, Clarence Barlow, François Bayle, Clive Graham, Sylvia Hallett, and Lawrence Casserley have all played an important role at different stages in the development of this thesis.

Finally I acknowledge the exceptional contribution that Pam Davies has made to this work. Without Pam's help, support, and insights many crucial advancements in the writing and dissemination of this research would have not been possible.

Contents.

Abbreviations……...……....xii

Illustrations…….xiv

Tables……..xvi

Introduction……p.1

1.On experimental music……..15

1.1. A brief history of the term 'experimental'……...18

1.2. The influence of modernist thought in the arts……..20

1.3. Experimentalism in music……..23

1.3.1. Musical modernism…….23

1.3.2. The musical avant-garde……..26

1.3.3. Musical experimentalism…….28

1.3.4. The American tradition of experimental music……...…….30

1.3.5. Schaeffer's definition of experimental music……...32

1.4. John Cage……..34

1.4.1. Cage's context…….35

1.4.2. Silence……36

1.4.3. Satie and Varèse……..37

1.4.4. Cage, Brecht, and Benjamin……39

1.4.5. Social aspects of Cage's experimental music……41

1.4.6. Cage's use of electronic technology…….43

1.5. The avant-garde and experimental music *querelle*……44

1.5.1. The appraisal of Webern…….44

1.5.2. Boulez and Cage…….46

1.5.3. Europe and the United States…….48

1.5.4. Avant-garde and experimental……..…….....49

1.5.5. Michael Nyman's *Experimental Music: Cage and Beyond*……...50

1.5.6. Joaquim Benitez's classification of contemporary music……..52

1.6. Electronic technology……56

1.6.1. Technology as a conceptual framework for experimental music..56
1.6.2. Experimental music as laboratory music…….59
1.6.3. The politics of electronic technology……...60
1.7. Improvisation……61
1.7.1. Cage and improvisation……...61
1.7.2. The concept of improvisation……64
1.7.3. Free improvisation, non-idiomatic improvisation and meta-music…….69
1.7.4. The politics of improvisation……..76
2. Hugh Davies's early works and the electronic music studio……..81
2.1. Profile……....82
2.1.1. Beginnings……..82
2.1.2. New musical instruments and exhibitions……...83
2.1.3. Work as a performer……...85
2.1.3. Work as a researcher……...85
2.1.4. Memberships……..86
2.1.5. The Arts Laboratory and the Artist Placement Group……87
2.2. Early works……...…….90
2.2.1. *2 Pieces for Flute and Piano*……90
2.2.2. The Oxford University works for traditional ensemble……...92
2.2.3. The rejection of serialism……93
2.3. Early interest in electronic music……....94
2.3.1. The Oxford University Contemporary Music Club…….94
2.3.2. The relationship with Oram……95
2.3.3. The British Institute of Recorded Sound discography……...….100
2.3.4. The Oxford University Studio for Electronic Music……..102
2.4. The *Répertoire international des musiques électroacoustiques*……106
2.4.1. The context of the catalogue…….108
2.4.2. The structure of the catalogue……...111
2.4.3. Assessment and reception…….114

2.4.4. Issues with the catalogue……...113
2.4.5. The impact of technology……...……...116
2.5. The electronic music studio at Goldsmiths College……..……117
2.5.1. The founding of the studio…...…….……117
2.5.2. Other studios in the UK……....118
2.5.3. Davies's attitude towards composing in the studio……119
3. The influence of Karlheinz Stockhausen……..121
3.1. Davies's work with Stockhausen……...121
3.1.1. The book on Stockhausen……..……....121
3.1.2. The assistantship……...124
3.1.3. Stockhausen's works during Davies's assistantship……126
3.1.4. *Mikrophonie I*……...……...127
3.1.5. Stockhausen in the UK…….130
3.2.Gentle Fire……....132
3.2.1. Gentle Fire and Stockhausen…….132
3.2.2. Stockhausen's intuitive music……134
3.2.3. Assessment of intuitive music by Gentle Fire……136
3.2.4. Gentle Fire's group compositions…….138
3.2.5. Davies's compositions for Gentle Fire……..146
3.2.6. A typical concert by Gentle Fire……151
3.3. Intermodulation, AMM, and Cardew……...152
3.3.1. Intermodulation……153
3.3.2. AMM……155
3.3.3. Cornelius Cardew……..156
3.3.4. The Scratch Orchestra……...161
3.3.5. Cardew's critique of experimental music……....162
4. Hugh Davies's invented musical instruments……..164
4.1. New instruments for new music……...165
4.1.1. Beyond the orchestral soundworld….……...…165
4.1.2. Escaping the ivory tower……...166

4.1.3. Amplification……167
4.1.4. Against synthesizers……..169
4.2. Invented instruments……...170
4.2.1. Early instruments……..170
4.2.2. Shozyg I……177
4.2.3. The Eggslicer……190
4.2.4. Found and discovered instruments……....192
4.2.5. The Springboards……..195
4.2.6. The Feelie Boxes……...205
4.2.7. Toy instruments……210
4.3. The *New and Rediscovered Instruments* exhibition……..215
4.3.1. Max Eastley……...219
4.3.2. David Toop……..221
4.3.3. Reception……..222
4.3.4. The London Musicians Collective…….223
4.3.5. Waisvisz and Bertoncini……....225
4.4. Practices in the visual arts..……..226
4.4.1. Sound sculpture……226
4.4.2. The *objet trouvé*……...228
4.4.3. Marcel Duchamp……..229
4.4.4. Fluxus……...234
4.5. *Music for Strings*…….237
5. Davies's environmental projects and works for traditional ensemble……..241
5.1. Invented instruments and installations…….241
5.1.1. *Music for Bowed Diaphragms*……..246
5.2. Music, nature, and society……248
5.2.1. Environmentalism…….248
5.2.2. Music and ethics……....249
5.2.3. Music and nature……...250
5.3. Environmental projects……....253

5.3.1. The *Meldoci Gestures* pieces…….254

5.3.2. *Natural Images*……257

5.3.3. The Sounds Heard……258

5.3.4. *Sounds Heard at La Sainte-Baume*……..261

5.3.5. Larger scale projects……..264

5.4. Music theatre pieces and works for small traditional ensemble…….267

5.4.1. Music theatre pieces……..268

5.4.2. Works for small traditional ensemble……271

Conclusions……...277

Notes…….285

Appendix 1. Documents from the Hugh Davies Archive……...302

Appendix 2. The *SHO-ZYG* exhibition. ……..……...333

Appendix 3. A selected list of Hugh Davies's works…….……..351

Bibliography……...357

Abbreviations.

APG…….Artist Placement Group

BIRS…….British Institute of Recorded Sound, London.

BL ……....The British Library, London.

DOA……The Daphne Oram Archive, Goldsmiths College, London.

GINC……...Gruppo di Improvvisazione di Nuova Consonanza.

GRM……Groupe de recherches musicales, Paris.

HDA…….The Hugh Davies Archive at the British Library.

HDC…….The Hugh Davies Collection at the British Library.

IEMC……Independent Electronic Music Center, Trumansburg, N. Y.

LMC…….The London Musicians Collective.

MEV……..Musica Elettronica Viva.

MIC……...The Music Improvisation Company.

NRI……...New and Rediscovered Instruments exhibition.

OCMC……...Oxford University Contemporary Music Club.

OUSEM…….Oxford University Studio for Electronic Music.

RAI……Radiotelevisione Italiana (until 1953 Radio Audizioni Italiane).

RIME……*Répertoire international des musiques électroacoustiques* or *Electronic Music Catalog.*

RTF…….....Radiodiffusion-Télévision Française, subsequently the Office de

Radiodiffusion-Télévision Française, now Groupement des Radiodiffuseurs Français de l'UER.

RW…….....BBC Radiophonic Workshop.

STEIM……..Studio for Electro-Instrumental Music, Amsterdam, Netherlands.

WDR…….Westdeutscher Rundfunk (until 1955 Nordwestdeutscher Rundfunk).

Illustrations.

Figure 1. Daphne Oram drawing timbres on the Oramics…….p.98

Figure 2. The Oramics machine……...99

Figure 3. Hugh Davies's score for *Group Composition II* and *V*…….……....143

Figure 4. Graham Hearne's score for *Group Composition II* and *V*…….…….……..144

Figure 5. Pages from Cornelius Cardew's *Treatise*……..……..160

Figure 6. Glass Rods and Bulb……..……..172

Figure 7. Comb Quartet……...……...173

Figure 8. Projector Bulb Quartet……...……..174

Figure 9. Spring Tin……..……..175

Figure 10. Two Threaded Rods……..176

Figure 11. Shozyg I and Shozyg II……..177

Figure 12. Shozyg I (1969 version) detail……178

Figure 13. Shozyg I (1969 version)…….182

Figure 14. Shozyg I (1969 version) detail……183

Figure 15. Shozyg I (1969 version) detail……184

Figure 16. Davies's table setup……....188

Figure 17. Davies with Eargong……..194

Figure 18. Springboard Mark VI…….199

Figure 19. Davies with Spingboard Mark III……..…….200

Figure 20. Springboard with pitches marked out…...……...201

Figure 21. Springboard Mark X……..202

Figure 22. Springboard Mark X detail…….203

Figure 23. Springboard Mark III detail……...204

Figure 24. Feelie Box……..207

Figure 25. Inside of a Feelie Box……208

Figure 26. Squeakbox Mark I……..……211

Figure 27. Lady Bracknell……...214

Figure 28. HD Breadbins……....216

Figure 29. Tellybrella……..217
Figure 30. Tellybrella……..218
Figure 31. Exhibition of Davies's Springboards……..244
Figure 32. Exhibition of Davies's Shozip……..……..245
Figure 33. Image from the score of *The Birth of Live Electronic Music*…….270
Figure 34. Worcester College, Oxford……..302
Figure 35. Worcester College……..……..303
Figure 36. Worcester College……..……..304
Figure 37. Worcester College……..……..305
Figure 38. Worcester College……..……306
Figure 39. The Oxford Playhouse Theatre, close to Worcester College, in Oxford….307
Figure 40. Oram's first letter to Davies……..……..……..……..308
Figure 41. Oram's first letter to Davies……..……..309
Figure 42. Oram's first letter to Davies……..……..310
Figure 43. Score for *Metamorphosis*……...311
Figure 44. Parts for *Metamorphosis*……....312
Figure 45. Parts for *Metamorphosis*……....313
Figure 46. Parts for *Metamorphosis*……....314
Figure 47. Layout of instruments for *Metamorphosis*…….315
Figure 48. Cover of Davies's undergraduate dissertation……316
Figure 49. Davies's undergraduate dissertation……..317
Figure 50. Davies's undergraduate dissertation…….318
Figure 51. Davies's undergraduate dissertation……..319
Figure 52. Karlheinz Stockhausen's letter to Davies confirming his appointment…..320
Figure 53. Stockhausen's letter to Davies confirming his appointment……...321
Figure 54. Envelope of Stockhausen's letter to Davies confirming his appointment...322
Figure 55. Cover of the first edition of RIME……323
Figure 56. Information structure in the first edition of RIME……324
Figure 57. Second edition of RIME……325
Figure 58. Information structure in the second edition of RIME……326

Figure 59. Section of the score for *Quintet*……...327
Figure 60. Section of the score for *Quintet*……...328
Figure 61. First copy of Shozyg I……329
Figure 62. Shozyg instructions included in Henri Chopin's *OU* magazine edition…...330
Figure 63. Davies performing……331
Figure 64. Davies performing……332
Figure 65. *SHO-ZYG* exhibition poster……333
Figure 66. St. James Hatcham Church……334
Figure 67. Exhibition map……..335
Figure 68. The Hugh Davies room……336
Figure 69. The Hugh Davies room……337
Figure 70. Letter from Stockhausen to Davies……..338
Figure 71. *Mikrophonie I* performance poster……...339
Figure 72. Newspaper article……..340
Figure 73. Shozyg I……341
Figure 74. Shozyg I, instructions and photographs……342
Figure 75. Shozyg I……343
Figure 76. Eargong instrument and poster……..344
Figure 77. Springboards……..345
Figure 78. Springboards……..346
Figure 79. Springboard Mk.III……347
Figure 80. Springboard Mk. X and prototype……348
Figure 81. Hugh Davies with invented instruments……349
Figure 82. Still from the film *Visiting Hugh Davies*……....350

Tables.

Table 1. Springboards classification……p.198
Table 2. *Meldoci Gestures* analysis……256

In memory of my teacher Hugh Davies and my grandfather Settino Palermo.

Introduction.

Hugh Davies (1943-2005) played a fundamental role in the establishment of the experimental and electronic music community in Britain. Between the late 1960s, when he began performing live electronic music in a duo with Richard Orton (1940-2013), and the mid-2000s, when he realised a series of site-specific installations – the last one being in a cave in Slovenia – Davies developed a body of work that variously embraced the aesthetic philosophy of experimentalism (a term discussed in chapter 1) and the integration of electronic technology in musical practice. As a prolific artist, Davies performed in new music ensembles and free improvisation groups, composed music for tape and for traditional small ensembles, devised installations in galleries and outdoor locations. However, his main creative activity focused around building instruments out of found objects, a practice that began in 1968 with the invention of Shozyg I, a concert instrument that consisted of an assemblage of various electronically amplified discarded items (see chapter 5). Although operating within what could be considered the fringes of the musical establishment during his career, Davies's uniquely idiosyncratic creative activities led him to develop a vast network of collaborators that included composers, visual artists, poets, and musicians. For instance, Davies worked with established composers like Harrison Birtwistle (1934-), and Jonathan Harvey (1939-2012). Birtwistle used Davies's Shozyg I in his work *Medusa* (1969, revised 1970 and 1978), while the world première of Harvey's *Madonna of Winter and Spring* (1986) at the BBC Promenade Concerts in 1986 involved Davies playing a sampling keyboard. The pop-rock band Talk Talk also featured Davies playing Shozyg I on the track 'The rainbow' from their album *Spirit of Eden* (1988). Together with his passion for building new musical instruments out of found objects came a dedication to search for new (musical) sounds outside the established Western concert hall music conventions. While drawing

inspiration from John Cage (1912-1992) and Karlheinz Stockhausen (1928-2007) in his artistic quest, Davies carved out a path that was distinctively his own. This thesis focuses on his work from the two decades between 1960 and 1980. Concentrating on this period allows the examination of the most important kinds of creative activity Davies was involved in, thus enabling the construction of as linear a chronological narrative as possible given his highly varied repertoire. This endeavour involves studying a wide range of outputs, from his serial compositions as a student composer to the environmental projects conducted with his own students. That these diverse activities unfolded almost in a chronological order during the temporal arc of these two decades suggests that they might have been part of the same artistic discourse for Davies, and therefore be logically connected in their genesis and development. In this thesis, the label 'experimental electronic music' is used as a framework to make sense of Davies's heterogeneous practices; its defining principles are applied to the discussion of a wide range of pieces that may not necessarily feature electronic technology at all, or may not include any musical instruments. This strategy implies that an underlying ideology existed in all of these works. Indeed, it is argued here that the experimental ethos characterised Davies's approach throughout his career. Davies is considered to be part of a larger group of composers, artists, and poets who negotiated the imperatives of an experimental practice based on the possibilities that electronic technology had opened up. Despite this, Davies was hardly mentioned in Michael Nyman's (1944-) *Experimental Music: Cage and Beyond* (1999), one of the most cited accounts of the aesthetics of experimental music. Nyman knew Davies very well as they had shared a flat in London[1]; thus Davies's exclusion from Nyman's book must be considered deliberate, confirming a feeling that Davies did not 'belong to the experimental music club'[2]. The present work is an attempt at readdressing this omission by arguing that Davies's works represent significant instances of experimentalism.

In Davies, we find a personal understanding and interpretation of experimentalism; a clue towards revealing what this interpretation involves is to be found in his objection to the concert series of new music organised in 1957 by Henry Jacob (1924-) under the title of *Vortex: Experiments in Sounds and Light*. Davies called Jacob's undertaking a 'naïve approach to experimentalism'[3] because it lacked original ideas and was repetitive. Furthermore, in his essay 'Four aspects of knowledge in creative work' (1976) Davies introduced the concept of an 'experiential approach', which was related to experimentalism. While experimentation described the creation of knowledge through scientific research, the experiential was characterised by an 'investigation of unfamiliar subjects and disciplines as potential sources of new knowledge', an attitude distinct from 'comfortably remaining with familiar [sources of knowledge]'[4]. It is this idea of a particular research agenda in music that confirms Davies's experimentalism; Davies's interpretation of experimentalism was similar to that of Pierre Schaeffer (1910-1995), who developed the concept of an experimental music in a language where the terms 'experiment' and 'experience' are indicated by the same word: *expérience* (see chapter 1).

Davies's reference to science when discussing experimental music acknowledged the long tradition of the experimental method in empirical enquiries. Such scientific tradition informed the debate over the nature and meaning of experimentalism in music. Thus the use of this term in the sciences will be further discussed and an explanation of its adoption in the arts will be given a historical and cultural context (see chapter 1). Experimental music embraced technology, and in particular electronic technology. For Davies the motivation for the development of electronic music originated in the desire to surpass what was achievable with human performers, even virtuoso performers, whose capabilities had already been stretched by the extremely precise notation of composers like Pierre Boulez (1925-), and whose limits had been

exploited by the indeterminate scores devised by composers like Cage[5]. The hope that electronic technology would help music break new grounds was shared and promoted with great intensity in the writings of Daphne Oram (1925-2003). Oram, who can be described as a mentoring figure for the young Davies, also dedicated herself to the building of new musical devices employing electronic technology. Throughout her active career, she was involved mainly in one such project, the Oramics, which nonetheless proved impossible to complete. In spite of this, Oram's vision of technological achievement in music remains compelling and a sign of the spirit of the time. In fact, she echoed the positive feelings of Edgar Varèse (1883-1965), among others, towards this technology[6] when she stated that thanks to the electronic medium 'a composer is his own interpreter, like a painter, assembling his work on tape like the artist covers his canvas'[7]. A critical account of Oram's philosophy of technology will be given (see chapter 2), as Davies would have come in contact with such a philosophy very early on because of his close relationship with her.

Despite the enthusiasm that electronic music had generated in Oram, few shared her sentiments in Britain. Davies believed Ernest Berk[8], a German expatriate living in London, to be the first composer to start working on tape in England. Berk had started assembling equipment in 1955, but his works had not been performed until 1963[9]. The BBC was slow to adopt electronic music as a viable practice; among its first productions featuring *musique concrète* was *Night Thoughts* in 1955. This was a 'radiophonic poem' that resulted from a collaboration between the English composer Humphrey Searle (1915-1982), a former private pupil of the Austrian composer and conductor Anton Webern (1883-1945), and the English surrealist poet David Gascoyne (1916-2001). In this piece the percussive sounds in the central dream sequence were played backwards and at various speeds[10]. Even after the establishment of the BBC Radiophonic Workshop in

1958 at the request of Oram, who became its first studio manager, there were hardly any opportunities for 'serious' compositions of electronic music. The Radiophonic Workshop (henceforth RW), which was established with the aim of creating incidental music and sound effects, was housed in the drama department rather than the music department and most of its productions were anonymous. Thus the RW like the studio directed by Schaeffer at Radiodiffusion-Télévision Française (henceforth RTF) in Paris developed within the environment of radio drama, although in the latter the composition of autonomous electronic music was supported and even encouraged. Indeed the work produced at the RW consisted mainly of sound effects for productions such as the Goon Show (e.g. sounds produced by the character Major Bloodnok's stomach), and signature tunes for radio and TV. According to Davies, the highest musical achievement by the RW was the music for an adaptation of *Orpheus* (1950) by Jean Cocteau (1889-1963), which included a montage of *Scène des Champs-Elysèes* by Christoph Glück (1714-1787) from the opera *Orphée et Eurydice* (1762)[11]. Among the productions that could be considered to be of musical value, were *Asylum Diary* (1959) by Roberto Gerhard (1896-1970) and *The Ox and the Ass* (1959) by André Almuró (1927-2009). Gerhard had established his own private studio in 1958, but often used the RW facilities, or an engineer would go to his home in Cambridge with some equipment. He had a commission for a work by the BBC that resulted in *Collages* (1961) for tape and orchestra, but he mainly composed incidental music. Most of Gerhard's works for the BBC were for plays such as *The Overcoat* (1842) by Nicolai Gogol (1809-1852), *Lament for the Death of a Bull-Fighter* (1935) by Federico García Lorca (1898-1936)*, Caligula* (1944)[12] by Albert Camus (1913-1960) and *The Cherry Orchard* (1904) by Anton Checkov (1860-1904). Gerhard distanced himself from the currents of new music that were coming from Continental Europe; in a letter dated 16 February 1963, apparently referring to serialism, he wrote to Davies that 'the only thing that I feel I have in

common with it is a very general new concept of music as non-language. This affects the physical quality of music, its structural nature, not communication. There as far as communication is concerned I part company with the avant-garde, since I am for it'[13].

One of the pioneers in the use of electronic technology in music in the UK was Tristram Cary (1925-2008), who, from 1947 onwards, experimented with discs played at variable speeds (10-150 rpm), and multiple pickups and closed grooves, which he combined with tape techniques between 1952 and 1958. Cary composed original music for several film and drama productions such as for the animated featured *The Little Island* (1958), directed by Richard Williams (1933-), which was awarded the first prize in the experimental music section at the Venice Film Festival in 1958[14]. Despite such accolades, Cary, like Gerhard, expressed little interest in tape music as 'pure' music[15], thus relegating it to a secondary role to accompany other media. Another composer who was seemingly interested in tape music only as an extension of sound effects for plays and films, and who also had an established private studio, was Desmond Leslie (1921-2001). Leslie mainly limited himself to composing very short pieces that were used for science programs. However, he also composed for films, for instance he realised the theme for *The Day the Sky Fell In* (1959) directed by Barry Shawzin (1930-1968). This consisted of a tape piece that used *musique concrète* techniques such as cutting and splicing, featuring among its sound sources motor horns. Other composers, who according to Davies lacked a belief in the capabilities of electronic music, were Geoffrey Wright (1912-2010), who wrote an electronic score for the ballet *Catharsis* in 1961, and Fred Judd (1914-1992), who had devised an early synthesizer that pre-dated the Moog, Synket, and Buchla[16]. When the first London concert of electronic music by British composers was given on 15 January 1968 at the Queen Elizabeth Hall, all but one piece had been composed in private studios[17], a testimony that the general lack of belief in

this kind of music also translated into a lack of state funding, and vice versa. Such circumstances in Britain cast a different light on the efforts that Davies (and Oram) made in establishing an electronic music studio in which to realise autonomous works (see chapters 2 and 3).

Furthermore, the electronic music that was composed in Britain at the time mainly relied on tape as its medium. Davies took this issue to task as he sought to develop a live electronic music, bringing some of the techniques that had been used in the electronic music studio to the concert hall. Davies believed that the imbalance that existed between live electronic music and tape music at the time would not have existed had magnetic tape been developed ten years later[18]. In fact the availability of this technology after its development by the Germans then taken by the Allied forces after the Second World War had created a bias in electronic music, favouring the use of recorded sounds rather than live performers in front of an audience[19]. The establishment of a live electronic music had also been one of Stockhausen's main concerns while Davies worked as his assistant in the mid 1960s, a period in which the German composer realised live electronics works such as *Mikrophonie I* (1964), *Prozession* (1967), and *Kurzwellen* (1968). In Stockhausen's *Mixtur* (1964) the live electronic sounds where integrated with live orchestral sounds (see chapter 4). It is indeed after his working experience with Stockhausen and upon his return to the UK in late 1967 that Davies began to develop his own live electronic music practice. The situation was however changing in the 1960s when the generation of electronic sounds by means of integrated systems such as the Buchla (1963) and the Moog (1967) from the US, the Synket from Italy (1964), and the English VSC-3 (1969) became widespread. These developments promoted the performance of live electronic music. Nonetheless Davies did not necessarily consider such developments in a positive light, and lamented the

standardisation of sound that some of these synthesizers enforced[20]. Davies described live electronic music as the transformation by electronic equipment of sounds from any, or any combination of, four sources, comprising conventional instruments, specially constructed or adapted instruments, sounds pre-recorded on tape, and electronically-generated sounds;[21] for example, instances of the first category were for him Stockhausen's *Mixtur* and *Mikrophonie II* (1965), while of the second Stockhausen's *Mikrophonie I* (1964)[22] and Cage's *Cartridge Music* (1960).

It was Cage who made the first forays into live electronic music. His *Imaginary Landscape no. 2* (1942) was a piece for tin cans, conch shell, ratchet, bass drum, buzzers, water gong, metal wastebasket, lion's roar, and amplified coil of wire; while *Imaginary Landscape no. 3* (1942) was for tin cans, muted gongs, audio frequency oscillators, variable speed turntables with frequency recordings and recordings of generator whines, amplified coil of wire, amplified marimbula (a Caribbean instrument similar to the African thumb piano), and electric buzzer. *Cartridge Music* could be considered the first specific live electronic music piece, where small objects were inserted into phonographic pick-up cartridges, such as pipe-cleaners, matches, feathers, wires, as well as furniture (tables, ladders, moveable carts, chairs, waste baskets). Rubbing or striking the objects produced the sounds, which were amplified through the cartridges. These pieces had a clear element of provocation but at the same time functioned as models for the potential of live electronic music to integrate unusual sound sources on the concert platform. Amplification was crucial in achieving this objective, and indeed Stockhausen claimed that his *Mikrophonie I* for tam-tam, two microphones, and two filters each with its own potentiometer, was the first piece to use the microphone as an instrument[23]. Stockhausen used a range of found objects to excite the tam-tam, which included 'spoons, tumblers, rubber articles...a clockwork eggtimer in a plastic case, wooden

spoons and other wood objects, and several small plastic utensils'[24], but later substituted these with more 'noble' materials. These were specifically constructed objects that resembled the original items. In this composition the microphones did not only facilitate sound reproduction and amplification, but they also exploited the proximity effect: their distance from the point where the tam-tam was excited actively transformed the sounds they picked up by either moving closer and thus transmitting a more intense and comprehensive image of the sound produced, or by moving away from it, thus including other sounds as well as reverberation. Stockhausen called this the 'microphonic process'[25] and said that it was an experiment that proved successful in revealing a soundworld that was remarkable in its novelty, even for someone like him, who had had substantial experience in creating and processing sounds in an electronic music studio[26]. The experience of working with Stockhausen and participating in the first performances of *Mikrophonie I*, and the influence of Cage and his philosophy of silence, have been crucial factors in Davies's development. The pursuit of a specifically live dimension within electronic music practice is striking, given Davies's work in compiling the *Répertoire international des musiques électroacoustiques* or *Electronic Music Catalog* (henceforth RIME) in 1967, which was a compendium of the world's knowledge in the field of studio equipment and techniques, as well as his role as the director for almost 20 years at the Electronic Music Studio at Goldsmiths College, London.

Much of the biographical information regarding Davies's work is not available in any other publication at the time of writing and has been gathered through research conducted at the Hugh Davies Archive at the British Library in London. The information gathered has been fundamental in developing an understanding of Davies's work and establishing a better assessment of his accomplishments. For instance, this research discusses a previously existent and yet unacknowledged earlier edition of

RIME that was published in 1962, five years before Davies worked on his edition of the catalogue. This bears testimony of an increasing interest in the electronic medium at the time and its emergence as a fundamental practice in music. The knowledge of an earlier edition of RIME also allows for a more accurate perspective on the work carried out by Davies (see chapter 3). A further and extremely important revelation of this research, not only within the context of Davies's work but in the history of British experimental music, is his establishment of an electronic music studio prior to the Goldsmiths electronic music studio, which has so far been considered the first studio of its kind at a British university. Davies had in fact already set up a temporary facility while he was a student at Oxford in 1963 (see chapter 3), which demonstrates his commitment in pursuing an electronic music practice by creating opportunities in a conservative environment before his experience of working with Stockhausen. In addition, the compositions for traditional instruments (chapter 3 and 6) discussed in this thesis have yet to be mentioned in discussions on Davies's work. These are considered to be necessary to clarify the extent of his musical abilities, in light of claims that Davies was not a real composer[27].

In summary there are four aims and objectives in this study. The first is to create knowledge regarding the work of Davies. Indeed, despite Davies's achievements there are no musicological studies that summarise his varied creative output[28]. In this study I seek to gather information and evaluate Davies's various activities from building instruments to composing works for small traditional ensemble. My intention is to develop an awareness of the extent of Davies's oeuvre. The understanding and interpretation of this oeuvre is another objective of this study. My purpose is to create a context both historical and aesthetic that can inform the assessment of Davies's work and its significance. For instance, in this study my thesis is that Davies's work

consistently demonstrated an experimentalist ethos; this does not mean that Davies himself necessarily interpreted his work in these terms – in fact, he might have even rejected such notion. However, it is my contention that whether aware of it or not, Davies's work expressed values that are consistent with the ethics of experimentalism, which, briefly, is explained here as modernism writ large.

A consequence of this thesis, and another aim of this work, is to stress the musical nature of Davies's endeavours. In this study this is often highlighted as an important aspect of Davies's aesthetic philosophy. Despite often recurring to unorthodox means and obtaining unconventional results, Davies understood his work as pursuing a musical project. Indeed, the notion of music as a social and aesthetic activity was never rejected by him. Rather, he sought a renewal of music, of its vocabulary and syntax. It would have also been possible to interpret Davies's work as sonic art or noise – these are valid categories that can help to clarify significant aspects of Davies's activities – however, in pursuing the thesis that Davies's work is to be understood as music, reveals the continuity as well as the rupture with tradition, which characterised such work.

Finally this study does not simply aim to account and understand Davies's contribution to music. Indeed, Davies's work offers an opportunity to develop further the aesthetic understanding of music itself. Therefore the last objective of this research is to reflect on issues surrounding music through the work of Davies. For instance, how does the work of Davies contribute to the questioning and challenging of the ontology of a musical instrument? How does it expand our understanding of the ideology of experimentalism? In what way it is helpful in demonstrating the impact of electronic technology in music? What does it tell us about the nature of composition and performance and the role of the artist in society? These questions are both raised and

developed by Davies's work, thus allowing for the discussion of issues that pertain more broadly to the philosophy of music.

In addition, the use of the Hugh Davies archive and the Hugh Davies collection at the British Library as the primary sources for this study raises issues that need to be carefully considered. The nature of an archive is contested, and it is necessary to develop a more critical perspective on its use for the creation of knowledge.

The material that constitutes the Hugh Davies archive and collection was acquired by the British Library shortly after Davies's death. Its passage from a private collection to a public resource was motivated by the wish to make this material available and accessible to a wider community and to posterity. Its acquisition by an institution like the British Library confirms the centrality of the archive for scholarly enterprise, which has been variously acknowledged[29]. This study in fact represents a negotiation with, an interpretation of, and a contribution to the Hugh Davies archive. For Michel Foucault (1926-1984) the archive:

> 'defines a particular level: that of a practice that causes a multiplicity of statements to emerge as so many regular events, as so many things to be dealt with and manipulated. It does not have the weight of tradition; and it does not constitute the library of all libraries, outside time and place; nor is it the welcoming oblivion that opens up to all new speech the operational field of its freedom; between tradition and oblivion, it reveals the rules of a practice that enables statements both to survive and to undergo regular modification. It is the general system of the formation and transformation of statements'[30].

For Foucault, thus, the power of the archive is to establish the possibilities of what can be said, of discourse. Indeed the development and scope of this present work has been shaped by the material present in the Davies archive. Furthermore, the authority of the archive as a repository of documents, as a historical record and a site of knowledge production, has been challenged by Jacques Derrida (1930-2004). In fact, Derrida read

the archive in psychoanalytic terms[31] as a 'fever' to save, to preserve, but also always working '*a priori*, against itself'[32], towards destruction, being made possible by the death drive[33]. Thus, For Derrida, the archive was a site of trauma and fragmentation, unreliable, hypomnesic (low on memory)[34]. According to Derrida there was a fundamental agency of the archive in creating memory:

> 'The archive as printing, writing, prosthesis, or hypomnesis technique in general, is not only the place for stocking and conserving an archivable content of the past which would exist in any case, such as, without the archive, one still believes it was or will have been. No, the technical structure of the *archiving* archive also determines the structure of the *archivable* content even in its very coming into existence and in its relationship to the future. The archivization produces as much as it records the event'[35].

Thus the structure of the archive, the methods of archivisation used, for Derrida, determined what could be archived, therefore shaping the memory of the past. For instance, the ability of the British Library to store only written material or recordings does not serve the work of Davies as well as it could, since Davies's invented instruments are a crucial component in understanding his work. This situation might place greater emphasis on Davies as a 'composer' rather than an 'instrument inventor' (two roles that, as it will be argued in chapter 4, were often coextensive in Davies's oeuvre). Furthermore, as Derrida has said of Freud, our knowledge and understanding of Davies's work would have been quite different if a technology such as email had been available to him. For instance, Davies's letters kept at the archive have been a fundamental resource in scholarly research on the compilation of RIME[36]. The analysis of structures and methods of archivisation also raises questions about how the archive is formed. For example, who makes decisions about what to acquire and what to discard and why. As Manoff has claimed, archival material is not an objective, accurate representation of the past, but a result of social, political, and technological forces (if not mere luck) that shape its being[37]. There is thus an argument for the challenging of

the notion that an archive constitutes a 'primary' source, as if the archive can give us a direct and unmediated access to the past, since records are always already assembled. Moreover, in the same way that Derrida has spoken of a Freudian signature on his archive[38], so we can speak of a distinctive Davisian signature on the Davies archive. In fact, the majority of the material that has gone into this resource had already been catalogued by Davies, it had already been filtered by what he thought was worth preserving.

To add to a more critical understanding of the archive and the knowledge it produces, it is worth stating that one's interpretation of the record is, as White claimed, a subjective act[39]. In gathering together material under the claim of developing a coherent discourse of Davies's artistic development, I am conscious of constructing a narrative that is necessarily an approximate translation of the 'idiom' of the archive, and that in turn, my own interpretation of the material is itself an archiving, what Derrida called a 'consignation,' in its aim to 'coordinate a single corpus, in a system or a synchrony in which all the elements articulate the unity of an ideal configuration'[40].

Therefore I consider my work not only as shaped by the Hugh Davies archive, but also as contributing to it, producing more of it, and therefore producing more testimony. As Derrida envisaged, the archive is 'never closed. It opens out of the future'[41], and indeed it is hoped that this will be the first of many studies on this resource, whose meaning cannot yet be fully assessed. As Derrida said: 'the archive: if we want to know what will have meant, we will only know in times to come. Perhaps. Not tomorrow, but in times to come, later on, or perhaps never'[42].

1. On experimental music.

Despite the wide use of the label 'experimental music' its meaning remains unclear. The epithet 'experimental' can be applied to works, either musical or literary, for the stage or for exhibitions, which employ new schemes of production and presentation, rather than the conventional formulas of an established genre. The Oxford English Dictionary describes 'experimental' as the art or artistic technique 'involving a radically new and innovative style'. However these definitions are not specific enough. In order to better understand the meaning of this term it is necessary to make a distinction between an experimental music from a music that is experimental: indeed, a music that is experimental could describe music in which some particular features of its genre, such as orchestration or harmonic development, have been intentionally and radically modified with the aim of expanding the expressive means of its conventions; experimental music, on the other hand, could indicate a historical genre of music that developed in the late twentieth century and that was marked by the systematic radical modification and rejection of Western art music traditions. The task of summarising in a unified aesthetic vision the meaning of the term 'experimental music' presents a challenge insofar as it attempts to categorise and even canonise a practice that relied on unstable and historically constructed terms such as 'convention' and 'tradition'. The distinguishing features of this experimental music were not necessarily in the methods employed, which ranged greatly among composers and even within a composer's body of work, but in the attempt at radically re-imagining what the musical material was, what a musical instrument was, and what the composer-performer-audience roles and relationship should be. This will be the understanding that will underpin the discussion in this dissertation. I will assert that experimental music deals with the *experimentalisation* of the process behind, as well as the very act itself of, music making. I will also claim

that Hugh Davies in particular shared such aims and therefore his work is best understood and considered within these terms. Adopting experimental music as a framework for this study is not without difficulties. Experimental music has been prevalently considered to be an American music genre and has often been identified with works such as *4'33"* (1952) by John Cage, *4 Systems* (1954) by Earle Brown (1926-2002), and *Edges* (1968) by Christian Wolff (1934-). In particular experimental music is often equated to Cage's theories of indeterminacy. In this thesis I take no issue with accepting these works as representative of an experimental music, and indeed Davies himself performed some of the works mentioned above with the new music ensemble Gentle Fire (see chapter 4). However, experimental music cannot be reduced to indeterminacy[1]. I argue that experimental music has wider currency than such a specific kind of approach. In this thesis I will adopt the definition of 'research in sound', a definition close to Pierre Schaeffer's understanding of experimental music as discussed later. This is a conscious strategy to further expand the understanding of experimental music. For such a revisionist approach to be effective, it seems necessary to attempt to understand the context in which the epithet 'experimental' was considered apt at describing a genre of music. Therefore in this chapter I will present a number of historical instances of the use of the term 'experimental' in the sciences. This brief historical excursus will inform the application of the understanding by Matei Călinescu (1934-2009) of the idea of modernity[2] to experimentalism. Călinescu has given an account of modernism as rooted in the Middle Ages and identified the idea of modernity as underlying cultural events across the centuries, such as the *querelle des Anciens et des Modernes*, a literary and artistic debate that developed in the late seventeenth century. To Călinescu, the idea of modernity was the fundamental aspect of modernism. Such understanding allowed him to draw a broad historical account of the origins and development of this twentieth century movement. The idea of modernity also offered

Călinescu the opportunity to distinguish a unifying element in the complexities of modernism; to Călinescu the idea of modernity entailed the preoccupation of modernists with *historical time*[3]. This specific time awareness for Călinescu was at the origin of a concept such as that of modernity, and also a characteristic of the avant-garde movements. I will later argue in this chapter that this is also a characteristic of experimental music. I will further interpret the research in sound that characterises musical experimentalism as an instance of the pursuit of a particular modernist agenda, namely the belief in progress. This will then create the framework for understanding the various theories of experimental music as discussed by Schaeffer, Cage, and others. In this context, it will become clear that such different understandings of experimental music are not incompatible, although their relative practices differed significantly. To further understand the context in which experimental music developed, I shall also discuss the debate between avant-gardists and experimentalists. The two factions argued for a distinction between their practices. Nonetheless I believe their arguments revealed inconsistencies that leave room for their greater assimilation within the broader frame of modernism. Such assimilation is also conscious of fostering integration of experimentalism in a specific musical tradition. That experimental music is part of the Western art musical tradition is the conclusion that I will also reach in examining Davies's work (see chapter 6). Despite the radicalism of Davies's understanding of music making and of a musical experience, from his re-imagining of the musical instrument to the new dynamics of a musical participation created by a sound installation, his was still an essentially musical project. In fact although experimentalists sought a radical renewal of music, the very notion of music as a social practice and as an aesthetic experience was never rejected.

1.1. A brief history of the term 'experimental'.

The use of the term 'experimental' in the arts, and in particular in music, began to gain currency around the second half of the twentieth century. The adoption of such a term, which had until then been largely used in scientific language, marked a development in the understanding of musical practice in that period. However, as discussed later in this chapter, significantly different interpretations of what should be the goals and aesthetics of experimental music were given. For instance, in the debate between avant-garde and experimental music, experimental music was accused of falling short of its scientific aspirations. To better understand this discourse and finally reject the notion that experimentalism in music should have strictly adhered to the same precepts as the experimental method in the sciences, I will briefly survey some of the meanings that have been historically attributed to experimentalism.

According to the Oxford English Dictionary 'experiment' comes from the Old French *experiment* [4], which is derived from the Latin noun of the verb *experiri*, to try. The noun has an original meaning of 'trial', and therefore 'experimental' expressed action as opposed to observation, referring to knowledge that was acquired through first-hand experience rather than testimony or conjecture. This definition is closely related to how this term was used in the sciences' experimental method. Such a method consisted in a course of actions by which a hypothesis was tested to illustrate truth, thus clearly distinguishing experimentation from observation, and stressing the manipulative process of the experiment. The establishment of a systematic process by which knowledge could be obtained has historically been attributed to Galileo Galilei (1564-1642). The refusal by Galilei to accept metaphysical arguments for the discussion of natural phenomena, but rather to base an understanding of facts on observation and demonstration (which represented a challenge to religious dogmas) allowed for the

systematic investigation of the relationship between an observed effect and its cause, until determining the two as mutually inclusive. Galiei identified two *progressions* in the experimental procedure to ascertain truth *a posteriori*. The intermediate stage in this set of operations was that of testing the possible cause of the fact. This test was called by Galiei *periculum*, the root of which was derived from the Greek *peira*, meaning 'test' (forming the basis for the aforementioned Latin verb *experiri*). The *periculum* consisted in an expedient, which would make apparent the laws governing the phenomenon studied. Galiei would, for instance, drop balls of different densities from the leaning tower of Pisa to observe which of these would reach the ground quicker, a test that allegedly led Galiei to conclude that the weight of the body had no influence in how quickly it would fall.

The notion of an experiment as the testing of a hypothesis is the most controversial understanding of the term 'experimental' in music. Indeed many argued that music could hardly be seen to fit such a model[5]. Nonetheless there are less restrictive definitions of this method in the sciences. The English mathematician, astronomer, and chemist Sir John Friedrich William Herschel (1792-1871) stressed the open-ended pursuit of the experiment and its fulfilment in observation. Indeed Herschel described an experiment as 'putting in action causes and agents over which we have control and purposely varying their combination, and noticing what effect takes place'[6]. More recently in the philosophy of science, the objectivity of the experimental method has come under scrutiny. The British professor Harry Collins (1943-) and the British sociologist Trevor Pinch (1952-) claimed that the experimental procedure rather than giving irrefutable and unquestionable results, has explored 'the limitations of certain techniques and procedures'[7]. Barry Gower argued for the recognition of a more open-ended experimental approach by stating that 'the experiments of mathematicians and of

gardeners are not so much tests of hypotheses or theories as explorations and investigations of unfamiliar territory'[8]. Gower posited the primacy in experimental thinking of a question such as 'what would happen if…?' rather than 'is such-and-such true?'[9]. Gower's description of experimentalism as exploring unfamiliar territory echoes Davies's understanding of the experiential as an 'investigation of unfamiliar subjects and disciplines' (see introduction), pointing to the possibility of a shared philosophy in both the scientific and artistic approach to experimentalism.

1.2. The influence of modernist thought in the arts.

The twentieth century was fertile ground for the development of the concept of experimentalism in the arts because of the dominant modernist ethos of progress. Although modernism was a complex movement that can and has been variously defined, it was generally characterised by an escalating antagonism towards traditional norms; this antagonism was complemented by a pursuit of new solutions. The heterogenic production of modernist art could thus be interpreted to aim at contrasting the transcendentalist traditional discourse of immutability and eternity of art. Furthermore, in rejecting tradition, modernism sought to fulfil the perceived duty to achieve the progress and innovation accomplished in the sciences. Such modernist traits will be directly connected to the aesthetics of experimental music.

According to Călinescu the adjective *modernus* was coined in the Middle Ages to respond to a need in drawing a distinction from a growing *antiquitas*[10]. Such temporal awareness was to develop into the heightened concern with history of the twentieth century. The historicisation of art in the twentieth century propounded the belief that art could not be understood independently of its historical context opposing previous transcendental,

eternal and immutable notions of art. Călinescu also described the complex relationship between past masters and present practitioners that characterised modernity tracing the first expression of such relationship in the words of the French Neo-Platonist philosopher Bernard de Chartres (died after 1124). De Chartres described the *moderni* as occupying a privileged position with respect to their predecessors of the *antiquitas*, because of the opportunity they had to rely on past accomplishments to develop their work. De Chartres therefore suggested a superiority of the *moderni*, albeit recognising their indebtedness to tradition[11]. The *querelle des Anciens et des Modernes* further articulated arguments in favour and against such a view[12]. The *Anciens* believed the art of the antiquity offered works of unsurpassable and eternal value, while the *Modernes* claimed that the present was a fulfilment, a realisation, and a perfecting of the past. The *querelle* was important because it began a debate about the concept of modernity that would continue to have repercussions into the twentieth century, however it is here also useful to understand the twentieth century polemic about the distinction between avant-gardism and experimentalism, which in many ways can be said to reproduce the same arguments. In the *querelle* of avant-gardists and experimentalists, which will be discussed more extensively later in this chapter, the former argued that the musical tradition had to be developed, while the latter that it had to be rejected *tout court*.

According to Călinescu it was the author Charles Perrault (1628-1703) who first proposed an application of the scientific idea of progress to the arts in his book *Parallèle des Anciens et des Modernes en ce qui regarde les arts et les sciences* (1688-97)[13]. The sciences were perceived in fact to have proven that many of the beliefs of the *antiqui* were erroneous, and progress had produced new, more correct knowledge. According to Perrault the duty of the arts, as well as that of the sciences, was to unveil what were the mistakes that a retrograde mentality entailed and therefore push the boundaries of knowledge

forward. Such pursuit was a characteristic of modernists and experimentalists who deemed that a rupture with the past was necessary to bring about the innovation that was demanded by the logics of historical development. To fulfil their duty of precipitating change, modernists advocated a radical and personal originality. Călinescu traced the first expression of this notion in the concept of *personalidad* by the Dominican intellectual Pedro Henríquez Ureña (1884-1946)[14]. *Personalidad* implied the lack of a unitary *modus operandi* in art practices. Indeed, the French Roman Catholic priest and professor Alfred Loisy (1857-1940) stated that there were as many modernisms as there were modernists[15]. This diversity was confirmed by the Nicaraguan poet Rubén Darío (1867-1916) who in 1880 used the term 'modernism' as an umbrella term to indicate various French literary tendencies such as *Parnasse, symbolisme, école romane, décadisme*, among others[16]. Similarly Schaeffer envisaged the experimental music project as an opportunity to synthesize diverse research programmes such as the concrete, the serial, and the electronic[17]. Experimentalism could be said to have been characterised by *personalidad*, a diversity of approaches that included inventing new musical instruments, adopting graphic scores, developing improvisatory and collective forms of performance and composition, as well as creating works that necessitated audience interaction, or were activated by non-human agents, such as natural forces. Davies used all of these methodologies, and in adopting them demonstrated a quintessentially experimental attitude.

The explosion of modernist practices in the twentieth century, which professed a cult of radical innovation, fundamentally involved the refutation of traditional values and beliefs. This attitude was the result of a heightened perception of a condition of crisis in the aesthetic and historical realms. Modernists were dissatisfied with the established tools of artistic production and held a sense that history had come to a pivotal moment

in its narrative. The First World War with the violence and destruction that it caused may have helped to catalyse such feelings to become the guiding principle in the production and criticism of the arts. In fact, Călinescu dated the beginning of the wide use of the term 'modernism' as a valid and positive description of a heterodoxy of practices that had at their core the polemical and vehement rejection of tradition to the 1920s[18]. Experimentalism in music also developed after the watershed of a World War, the Second World War, and indeed a sense that the old world had come to an end reached its peak in the aftermath of the scale of destruction and human loss that such conflict had caused. It could be argued that the radicalism with which experimentalists approached music could be a mediation of the condition in which Europe found itself at the time, with entire cities and social and political structures to rebuild. These circumstances were expressed in Germany with the term 'Stunde null' (zero hour) to refer to the collapse of the Nazi government and the necessity for a new beginning.

1.3. Experimentalism in music.

1.3.1. Musical modernism.

The twentieth century antagonism towards the past in music converged in particular against traditional tonality. There are several reasons that account for such a focus. For instance the studies on acoustics and psychoacoustics conducted by the German physician and physicist Hermann von Helmholtz (1821-1894) and the Austrian physician and philosopher Ernst Mach (1838-1915) revealed that traditional tonality was not grounded in physics and physiology. For instance, Helmholtz declared that physical knowledge had been 'totally barren' in the development and foundation of the theory of harmony[19]. This destabilised tonality as a 'natural' musical system. Furthermore, the

rationalism and formalism of some modernist music called for a new objectivity that openly contrasted with the expressive and personal character of nineteenth century music. The narrative quality that tonality seemed to confer to the music of the Classical-Romantic tradition was thus frustrated. In addition, to some modernists traditional tonality fell short of fulfilling music's duty to mediate the historical circumstances in which it was produced. Given the strong historicisation of art in the twentieth century, the continuation of a traditional tonal discourse appeared untenable. For instance, for Theodor Adorno (1903-1969), an artwork should not be harmonious in a world that was characterised by discord. For Adorno the duty of the artwork was to bear witness to all the horrors of the war and social persecution that characterised its time. Adorno believed that 'the violence done to the material imitates the violence issued from the material'[20]. Adorno championed in particular the music of the Austrian composer Arnold Schoenberg (1874-1951) as an example of what he deemed to be successful art, although he was opposed to Schoenberg's later development of serialism. In the early twentieth century Schoenberg declared the 'emancipation of dissonance' and his development of atonality undermined the traditional architecture of Western art music. For Adorno dissonance revealed the problems of society, however the reception of such works was mixed. For example, the premières of Schoenberg's Quartet no. 2 in 1908 in Vienna and of *Pierrot Lunaire* in 1913 in Berlin caused a scandal. This highlighted the increasing gap between modernist music and the larger audience, a gap that would become even wider in experimental music.

Despite their preoccupation with innovation, modernist composers, unlike their counterparts in the fine arts, greatly encouraged the development of a narrative in music history, in a bid to validate their contribution. For example Schoenberg, in a radio address in 1933 on the occasion of the 100th birthday of the German composer

Johannes Brahms (1833-1897) claimed that Brahms had anticipated the innovations of modernism[21]. The question of influence did not only have aesthetic implications, but also geographical and political aspects. For instance Schoenberg declared that his twelve-tone method was the means by which the Austro-Germanic tradition would preserve its supremacy[22]. Such supremacy was apparently taken for granted because of the works of Joseph Haydn (1732-1809), Ludwig van Beethoven (1770-1827), Franz Schubert (1797-1828), Anton Bruckner (1824-1896), and Gustav Mahler (1860-1911).

The modernists' complex relationship with the past could not have arisen without an established notion of a tradition in the twentieth century. The firm identity of a classical repertoire was confirmed by the development of alternatives such as the early and new music repertoires. James Parakilas described early music not only as a repertoire that looked for music beyond the common-practice and the canonical repertoire, but also as a performing practice, as an attitude that sought to 'reconstruct lost performing styles'[23]. To do so performers chose to perform works within their (imagined) original historical context. For instance early music practitioners used different instruments to perform early and late works by Johann Sebastian Bach (1685-1750). This contrasted with the attitude expressed in classical music programmes, where an overarching and repressive narrative of continuity of great composers and great works was established. Modernist music could be considered as a development of the principle of a new music repertoire, which sought to depart from the familiar sound of what had come to be known as 'classical music', with experimentalism representing a further and more extreme expression of such departure.

1.3.2. The musical avant-garde.

The modernist antagonism towards the past inevitably had political resonance. For example, under Nazism modernist music was banned as 'Entartete Musik' (degenerate music) as part of a general campaign against 'Entartete Kunst' (degenerate art), art that was considered decadent and harmful. For instance, the music of Anton Webern was banned from publication and performance with the Anschluss between Austria and Germany in 1938. Webern's association with Schoenberg, who was Jewish, also played a part in the censoring of his music. Nonetheless, the persecution of members of the modernist movement and the suppression that the Nazi and Soviet governments alike enforced on forms of modernism led to a second wave of modernism in the post-1945 cultural landscape. In music this wave became known as the avant-garde. Schoenberg's earlier development of serialism was extremely influential in the avant-garde practice and it cannot be overestimated. In fact Pierre Boulez drew a direct lineage from Schoenberg, admitting that 'perhaps we can say that the series is a logically historical consequence, or – depending on what one wishes – a historically logical one'[24]. Nonetheless, in a typical gesture of rejection of the past – indicative of the escalating intransigence of the avant-garde – Boulez accused Schoenberg of conspicuous shortcomings. In the article 'Schoenberg is dead' published in 1952 Boulez claimed that Schoenberg was unable to 'foresee the soundworld that the series demand'[25], claiming that the Austrian composer had allowed old forms to thwart the development of the new serial language[26]. Boulez used serialism as a framework to assess the historical relevance of compositional practice, claiming that 'since the Viennese discovery, every composer outside the serial experiments has been *useless*'[27]. According to Boulez not employing the serialist technique would have brought a composer 'short of the needs of his time'[28], a conviction that he would later continue to support[29]. The acute awareness

of the historical context of one's work and the predominant concern with progress was a characteristic of the musical avant-garde as much as it had been for modernists. In particular this was an underlying theme in the discourse of the Darmstadt School, the circle of composers who attended the Darmstadt International Summer Courses for New Music from the late 1940s to the early 1960s, among which were Boulez, Stockhausen, and the Italian composer Luigi Nono (1924-1990). Nono reprised Boulez's discourse of 'historical logical development' in the lecture 'The development of serial technique', which he delivered at the Darmstadt summer school in 1958. Nono assessed the work of Schoenberg in conceiving the series as a 'first stage'[30], which culminated, after the work of Webern (representing another stage) in works by himself, Stockhausen, Boulez, and the Italian conductor and composer Bruno Maderna (1920-1973). In these works the series was used as the ordaining principle of pitch, tempo, duration, register, dynamics, and articulation. To Nono extending Schoenberg's principle thus ensured a logical progression towards the future[31]. The prominence given to such a historical perspective could be construed as culminating in the arguments of the American composer Milton Babbitt (1916-2011), who in his article 'Who cares if you listen?', published in 1958, compared the advancement of music with that of mathematics, philosophy, and physics and placed its development above the capacity of the audience to understand its complexities[32]. The problematic relationship with the past felt by the avant-garde was expressed by Heinz-Klaus Metzger, who stated:

> 'Since there is no longer a pre-existent musical language but rather each work must first build its own, the relation between this language and the objective linguistic state of the historical moment is, like its negative function of critical reflection on earlier stages, a condition immanent in the very business of composition, and not primarily a question of situation in musical history. The great conceptions of Boulez, Stockhausen, and Pousseur draw their strength not only from their quasi-systematic consistency, but equally from the way they 'compose out' their historical positional value and their act of negation emphasizes the concept of what is negated, this concept gives them an exclusive claim to be the legitimate tradition'[33].

Furthermore the avant-garde also antagonised the concept of the autonomy of art, which was developed in the eighteenth century in the wake of the bourgeoisie seizing political power during the French Revolution, and which became a fundamental ideal in nineteenth century aesthetics. The aesthetic withdrawal of art from the world came under attack with the avant-garde, which challenged the separation of the praxis of life and art, the cult of the artistic genius, the single reception of the artwork, the principle of mimesis, and the very framing of an aesthetic experience. According to the German critic and philosopher Walter Benjamin (1892-1940) technological progress, such as lithography and photography, enabled the artist to illustrate everyday life[34]. Furthermore to Benjamin mechanical reproduction detached artworks from tradition and abolished the distance that existed between people and the artwork (the 'aura' of the work)[35]. To Benjamin the age of mechanical reproduction not only made art accessible to the masses, but also precipitated the distinction between author and public[36]. On the other hand, the historicisation of earlier modernist practices and the consequent institutionalisation of their works in the museum and their subsequent absorption in the very tradition that they sought to oppose, put the concept of the avant-garde in crisis, as it proved its failure to resist the pull of the past and tradition. Because of these complexities in the relationship with the past, the twentieth century *moderni* turned an increasingly self-critical eye towards their own procedures. In fact, in a bid to further their flight from the past the modernists had to adopt a more intransigently forward-looking position to guarantee their successful realisation.

1.3.3. Musical experimentalism.

Nonetheless, the militaristic overtones implied by the notion of an avant-garde had become distasteful after Nazism. The Italian critic Angelo Guglielmi (1929-), one of the first theorists of experimentalism, distinguished between a historical avant-garde, the *avanguardia*, and a *neo-avanguardia* or *sperimentalismo*. The conflation of the terms 'neo-avant-garde' and 'experimentalism' pointed to the connection of experimentalism to the earlier avant-garde practices. Guglielmi found the term 'avant-garde' too ideologically fraught, while the term *sperimentalismo*, on the other hand, was a more suitably neutral term[37]. For Guglielmi, the goal of the experimentalists was 'the research of a new formulae in combining expressive elements, discovering new stylistic concoctions in which the most unpredictable "materials" are used, and opening up to the most daring lexical contaminations'[38], a definition which is reminiscent of Herschel's description of an experiment as the product of various manipulations and combinations (see earlier discussion).

Experimentalism in music thus shared the same aesthetic principles of the avant-garde, albeit representing a further radicalisation of its practices. Experimentalism developed within a modernist aesthetics. Indeed Schoenberg was an important figure in experimentalism; both Schaeffer and Cage saw his questioning of the traditional tonal structure as opening the doors to experimental music's research in sound. Indeed I argue that Cage's radical integration of ambient noise into the musical fabric can be considered a development of Schoenberg's emancipation of dissonance on the basis of their frustration of a tonal narrative in music. I also argue that Schoenberg's emancipation of dissonance is at the root of Davies's new musical instruments, which were specifically constructed so as not to allow traditional tonal playing (see chapter 5). Nonetheless, while musical avant-gardists sought a historically logical development of

tradition, experimentalists advocated for a clearer rupture with it. However experimentalists did not necessarily see themselves as supplanting tradition. Daphne Oram, for example, believed that her work in electronic music could be a complement to orchestral tonal music[39].

Experimental music was fraught with the geo-political issues inherent in tracing one's influence. Such issues were exacerbated by the debate with the avant-garde, which posited an opposition between the 'European' avant-garde and 'American' experimentalism. Despite such binary opposition, experimentalists acknowledge the influence of European composers. For instance Cage looked at the French composer Erik Satie (1866-1925) to validate his work. The Hugh Davies Collection at the British Library presents a large number of recordings of the American composer Charles Ives (1874-1954), which demonstrates the close attention that Davies paid to his work. In virtue of this, I argue that a marked international breath characterised the aesthetic development of experimentalism. For instance the emergence of international movements like Fluxus in the late 1960s proved the increasing tendency in the sharing of ideas across national boundaries. In Britain Davies, Cornelius Cardew (1936-1981), and Tim Souster (1943-1994) all had experience working in Germany with Stockhausen, while at the same time taking inspiration from Cage's work. Thus, although experimental music in Britain could be said not to have a distinctively 'British' character because of its disparate international, rather than national, influences, its assimilation of influences from Continental Europe and the United States could indeed be said to be an artistic characterisation of Britain's particular geographical location and of its political stance as a bridge between Europe and the US.

1.3.4. The American tradition of experimental music.

Guglielmi's vision of experimentalism as researching 'new formulae, new stylistic concoctions, with unpredictable materials' was confirmed in the techniques and methodologies used in the American experimental music tradition. The music of Ives, of the French-born Edgard Varèse (who spent most of his career in the US), and of the American composer Henry Cowell (1897-1965) was part of this tradition and was promoted by the International Composer's Guild (1921-1927), which was founded by Varèse, and consequently by the Pan American Association of Composers (1928-1934), founded by Cowell. It was the works of these two composers that exemplified in particular the interest in new musical materials characteristic of experimental music. Indeed such research in sound was already evident in works like *Amériques* (1918), *Hyperprism* (1922-1925), *Intégrales* (1924-1925), and *Arcana* (1925-1927) by Varèse. These works greatly broadened the palette of musical sounds by employing percussion instruments. The percussive element became a feature of American experimentalism. Meanwhile, Henry Cowell's works pointed to a deliberate broadening of the timbral resources of music by searching beyond the cultural confines of the Western world. Nonetheless, Cowell revealed the hold that historical concerns had in his musical project by seeing the necessity to 'draw on those materials common to the music of all the people of the world [in order] to build a new music particularly related to our own century'[40]. Thus using sources of indeterminate pitch such as percussion instruments shifted the emphasis of the musical experience from a tonal narrative to a rhythmic organisation. Cowell's dissonant counterpoint in a piece like *String Quartet No. 1* (1916) and the building of sound aggregates based on the piano strings in *The Banshee* (1925) were also influential on Cage's work. The employment of disparate percussive sources engendered the building of new musical instruments capable of producing sound

objects that were outside of the orchestral instrumentarium's soundworld. The American composer Harry Partch (1901-1974), for example, built instruments that were capable of producing alternative tuning systems, among which quarter-tones; Ives also employed this technique. The re-discovery of quarter-tones assumed a political significance, as composers turned their attention to pre-classical and folk techniques. This tendency can be heard in works such as Varèse's *Hyperprism*, Cowell's *Trio in Nine Short Movements* (1965), Lou Harrison's (1917-2003) *Symphony in Free Style* (1955), and Partch's *Delusion of the Fury: A Ritual of Dream and Delusion* (1965-6). However such a strategy was not limited to works composed in the United States. For instance, the Czech composer Alois Hába (1893-1973) used these intervals in his *Suite* (1917), and in his opera *Matka* (1929). Hàba also used sixth tones, as well as building specific instruments for the realisation of his pieces. Hàba's instrumentarium included three types of quarter-tone piano (1924–31), a quarter-tone (1928) and a sixth-tone (1936) harmonium, a quarter-tone clarinet (1924), a trumpet (1931) and a guitar (1943). Building new instruments was thus a way to expand the diatonic soundworld, a project that would also be shared by the inventions of Oram and Davies.

1.3.5. Schaeffer's definition of experimental music.

Despite the American development of an experimental music, Schaeffer was among the first to theorise the genre's aesthetic aims. However very few of Schaeffer's writings have been available in English until very recently, which has created an obstacle to the wider acknowledgement of his thoughts on the subject. These circumstances have also limited the account that can be given here of Schaeffer's theories. Nonetheless, I argue that Schaeffer's understanding of experimentalism is still its most valid description and also of Davies's work. For Schaeffer musical experimentation meant research into sonic

objects[41] and instrumental manipulation[42]. The primacy of sensory apprehension and focus on the physio-psychological effect of this approach represented thus 'tentative efforts of experience' of the musicality of these aural objects[43]. Therefore, in Schaeffer, experimental music aimed at raising issues inherent in the material, maturing a sensibility and a fundamental sensuality concerning them. Experimental music works were thus considered works-in-progress that necessarily distanced themselves from finished compositions. This unfinished status of experimental music works was in no way a detrimental aspect. In fact Schaeffer said to 'prefer an experiment, even aborted, to a successful oeuvre'[44]. With the aim of integrating concrete, serial, and electronic music under the banner of experimental music, Schaeffer launched the First International Decade of Experimental Music organised by the *Groupe de Recherche de Musique Concrète de la Radiodiffusion-Télévision Française*. The event took place in Paris between 8 and 18 June 1953 and aimed at discussing 'a music in process of experimentation'[45]. In 'Vers une musique expérimentale' Schaeffer called for the abandonment of the abstractions of a *parti pris*, a preconceived view, which failed to consider the totality of the different categories and families that existed in the universe of sound. In this respect Schaeffer's understanding of experimental music was thus in accordance with the purpose of the scientific method that sought to establish truth *a posteriori*. For Schaeffer, attention had to be turned to the acoustic event, rather than the technique employed to produce it, to avoid reaching an abstraction, which missed the inherent musicality in the material[46]. In Schaeffer's view, modern music enjoyed a greater range of sounds, which had already began to be divorced from their 'natural' environment of the concert hall, from their physical source (the musical instruments), as well as from their geographical and historical position as Western art music. Schaeffer believed in the possibilities that electronic technology had opened up to explore the universe of sound. To fulfil this experimental music project it was thus necessary to

dedicate time to musical research[47]. Thus for Schaeffer experiment and research are equivalent terms. Nonetheless, the attention that Schaeffer paid to experimentation was different from the adoption of such an aesthetic by Cage, who derived from it a conclusive musical form. Indeed, Schaeffer's tone with regards to experimental music works of the American tradition was decidedly cautious, when, in 1957 in 'Lettre à Albert Richard', he expressed the opinion that applying a system to the newly discovered sonorities, such as in the prepared piano by Cage, was a 'rushed' decision[48].

1.4. John Cage.

Cage contributed to the establishment of an experimental music not only in his works, but also in his numerous writings on the topic. Cage's reputation in Western art music circles as a theorist was consolidated by a series of tours and lectures in Europe in the late 1950s, which confirmed his status as an influential composer outside America. Cage's first collection of writings, *Silence*, was published in 1961 bearing witness to the evolution of his thought and the broad range of his interests. In *Silence*, Cage touched upon a number of topics that were central to experimental music: technology, instrumentality, performance, and listening. His writings are widely considered to be the point of reference when discussing the aesthetics of the genre. Cage's central role in experimental music is indeed acknowledged in the literature on the topic. In fact all the literary sources used in the following discussion (Heinz-Klaus Metzger, Michael Nyman, Christopher Ballantine, Joaquim M. Benitez, David Nicholls, and Frank X. Mauceri) primarily refer to Cage when discussing experimental music. Leigh Landy has even called Cage 'a saint of experimental music'[49].

1.4.1. Cage's context.

Cage's definition of experimental music as 'an action whose outcome cannot be foreseen'[50] has become a commonly accepted definition of the genre. Nonetheless as mentioned before I argue for a broadening of the understanding of the term to coincide with the Schaefferian notion of 'research in sound'. While it implied a more restricted meaning for the term, Cage's thought had the merit of developing the philosophical scope of the theory of experimental music. For Cage, experimental music called for a complete renewal of the theories and practices of music making in the Western tradition. In 'History of experimental music' (1959) he claimed that 'the procedures of composing tend to be radical, going directly to the sounds and their characteristics, to the way in which they are produced and how they are notated'[51]. According to Cage the radicalisation of the procedures of obtaining sounds marked the nature of experimental music as unpredictable; it was this very process that validated the result. Despite claims of rejecting tradition *tout court*, Cage's ideas were indebted to the work of Schoenberg. Indeed according to Cage, although atonality created an 'ambiguous tonal state of affairs'[52], he admitted his *Sonatas and Interludes* provided a form of *Klangfarbenmelodie*[53]. However, pitch serialisation for Cage determined the note-to-note succession but fell short of building a suitable structuring architecture. This was incidentally the same accusation that Boulez advanced against Schoenberg in 'Schoenberg is dead'. Nonetheless the kind of experimental music that Cage promoted could indeed be said to continue the research into sound that the French composer Claude Debussy (1862-1918), as well as Schoenberg, and Webern had begun, a research in which Ballantine claims sound had become more 'empty and open'[54]. Such relationships would lead Mauceri to argue that 'the category "experimental music" is motivated by a European ideal'[55]. The underlying principle of Cage's theories was a typically modernist concern

about the teleology of art, but it is arguable whether there is anything particularly European about this idea. Cage saw history as the 'story of original actions'[56]. 'Original actions' for Cage were opposed to the status quo, thus departing from tradition was for Cage a historical imperative. In music, the status quo for Cage was classical harmony, which was deemed incorrect in its historical function during the twentieth century[57]. This was so because harmony was said to organise pitch, but not silence. Silence, in fact, was for Cage as much a component of the musical work as sound.

1.4.2. Silence.

Cage said that 'a sound has four characteristics: frequency, amplitude, timbre, duration. Silence (ambient noises) has only duration'[58]. This statement may seem to contravene common sense but I believe it needs to be understood as an attempt by Cage to understand silence in a holistic manner rather than in a parametrical fashion, thus distinguishing his philosophy of music from that of serialism. Cage stressed this holistic aspect claiming the need to work in terms of totality rather than discreet conventions[59]. In Cage's narration, he developed this perspective on silence during a visit he paid in the early fifties to the anechoic chamber at Harvard University. This environment suggested to him the interpretation of silence as the necessary temporal framework to allow contingent sounds to emerge. In the chamber, Cage realised that what he called the 'entire field of sound' and 'the entire field of time' coincided[60]. In Cage's thought, thus, sound and silence were not opposite states, but the same state. However, the anechoic chamber had proved to Cage, as he became aware of his own heartbeat and blood flow, that sound was ever present, that there would always be sound. This caused a shift in listening from exclusive attention (giving primacy to musical sounds and relegating contingent sounds to the background) to inclusive attention[61] because 'sounds are

events in a field of possibilities, not only at the discrete points convention has favored'[62]. This inclusive attention moved beyond the framing of sounds in the concert hall, which gave prominence to some sounds rather than others, perpetrating a discrimination, selection, and isolation into a musical work for performance. Indeed the goal of the purposelessness engendered by indeterminacy was to free up the mind before entering the act of listening. To Cage 'each human being is at the best point of reception'[63], comparing the human mind to a 'receiver'[64]. Cage said:

> 'This turning is psychological and seems at first to be a giving up of everything that belongs to humanity – for a musician, the giving up of music. This psychological turning leads to the world of nature, where, gradually or suddenly, one sees that humanity and nature, not separate, are in this world together; that nothing was lost when everything was given away. In fact, everything is gained. In musical terms, any sound may occur in any combination and in any continuity'[65].

Listening, for Cage, was thus a vital process in the production of music, or rather in the establishment of the conditions by which music can happen. Cage spoke of this practice as leading to nature, although the term 'nature' is not given any further characterisation. It may be said that in Cage the act of composition and that of listening are brought closer together than their traditional separation as activities that were specific to the composer or the audience.

1.4.3. Satie and Varèse.

As Schoenberg had proclaimed Brahms to be a precursor of modernism, Cage also participated in the writing of an overarching historical linear narrative, when he identified Satie as 'indispensable'[66]. The acknowledgement of a European art composer as influential in experimental music is however problematic in the light of Cage's claims about the nature of original actions. Also drawing inspiration from European art music was highly contentious in the context of the avant-garde and experimental music

debate. Cage's claims on lineage further support my proposal for a less restrictive geographical aspect in defining experimental music, as well as for a greater assimilation of the aesthetics of experimental and avant-garde music. In any case, it is easy to see why Satie was important for Cage more than any other any composer. Satie's motto, 'show me something new; I'll begin all over again'[67], could read as a mission statement of experimental music – as well as a modernist mantra. On the other hand, Satie's empty time structures as identified by Cage[68] were the ideological precursors to Cage's durations, which allowed the American composer to 'let sound be themselves'[69]. Cage quoted Satie's claim that the *esprit nouveau*[70] 'teaches us to tend towards an absence (*simplicité*) of emotion and inactivity (*fermeté*) in the way of prescribing sonorities and rhythms which lets them affirm themselves clearly, in a straight line from their plan and pitch, conceived in a spirit of humility and renunciation'[71]. To Cage, the absence of harmonic progression advocated by Satie meant that sounds were not treated as a reflection of one's own intuition, therefore divesting music of functionality and intentionality. Furthermore, Satie's consideration of environmental sounds such as forks, knives, chatting, street noises was the closest strategy to Cage's inclusion of what had previously been considered background noise into the fabric of music. However, there is a discrepancy between the neutrality that Satie wished to confer on these sounds and the identity that Cage bestowed on them. In fact, for Satie, these sounds were not supposed to be listened to. Rather, as a *musique d'ameublement*, they were simply part of the background. Contrarily, for Cage these sounds were to be experienced with concentrated listening.

In Cage's account it was the shift in emphasis to the listening experience that brought him to accept the term experimental music[72]. The acceptance of such a term marked a different understanding of the concept of music, which was no longer 'organised sound'

but 'experimental'. 'Organised sound' had been the definition of music that in 1962 Varèse had chosen for his music. Varèse had also coined the term 'organised noise' to describe music which included the possibilities that the electronic medium had opened up[73]. Nonetheless the organisation of sound implied an organising agent – the composer – or, in Varèse's terms, a 'worker of rhythms, frequencies, and intensities'[74]. On the other hand Cage sought, at least to a greater degree, to abolish such agency. Thus in experimental music Cage professed a state of constant flux of sound, 'impermanently involved in an infinite play of interpenetrations'[75]. Such continuity was allowed by the increasing degree of randomness in the compositional and performance process, achieved by non-intention, non-psychology, non-memory, 'by not giving it a thought'[76]. Abandoning control, for Cage, was thus a means to relinquish personal taste, since he believed that a conscious action, an act of will, would have restricted the 'totality of possibilities' to only 'some eventualities'[77].

1.4.4. Cage, Brecht, and Benjamin.

Ballantine raised a number of stimulating points about Cage that deserve further discussion. Indeed he made reference to Bertolt Brecht's (1898-1956) theory of the theatre as an apparatus that neutralises the potential disruption of its content and the theory of the aura of an artwork by Benjamin as a strategy to understand Cage's experimental music in a broader aesthetic context, which is vital to fully understand some of the implications of this genre's practice. In this discussion I will expand on such comparisons and use *4'33"* as a point of reference.

With Epic Theatre Brecht aimed at creating an art that was conscious of its historical and technological context and disruptive of the traditional aesthetics by seeking a

coincidence with real life. In 'The modern theatre is the Epic Theatre: Notes to the opera Aufstieg und Fall der Stadt Mahagonny', Brecht claimed that art was governed by lucrative ends, and that the cultural apparati (such as institutions, bodies, network systems) participated in the absorption of art into a process of production and consumption. This implied a falsification of art as its relationship between the producer and the means of production were severed[78]. In 'The literalisation of the theatre', Brecht expressed this falsification process as 'theatreing down', calling for a battle between theatre and play[79]. To Brecht, improving this apparatus was an ethical concern of the committed artist, and one way to fulfil such a goal was turning the audience into collaborators. Brecht stated that through the exceptional austerity of its apparatus Epic Theatre facilitated the possibility for every spectator to become one of the actors[80]. In Brecht's *Lehrstücke* plays, the learning-plays, members of the audience actively participated in the play. The participatory ideal had been shared in modernist literary circles for some time. For instance, the Uruguayan-born French poet Comte de Lautréamont (1846-1870) declared that 'poetry must be made by all, not by one'[81]. Cage's *4'33"* could be said to possess the participatory nature sought by Brecht's theatre as the audience produced the very sounds that the work consisted of, albeit their production was not deliberate. As mentioned earlier Benjamin believed that the mechanical reproduction of an artwork would allow anyone to participate in the creation of art. For instance, the newsreel for Benjamin gave everyone the opportunity to 'rise from passer-by to movie extra'[82]. In the same manner in Cage's *4'33"*, a product of technology as inspired by an anechoic chamber, any member of the audience could rise to the status of musician. Benjamin also spoke of the capacity of the camera to introduce us to 'unconscious optics' in the same way that psychoanalysis brought to the fore unconscious impulses; in the case of *4'33"* it could be argued that what are revealed are 'unconscious acoustics' by revealing sounds that had been previously covered up by

intentional sounds. The introduction of everyday sounds in the concert hall environment in *4'33"*, might be said to have sought what Brecht called 'the whole radical transformation of the mentality of our time'[83]. This is confirmed by turning the mechanism of the site of listening and the very act of musical listening onto itself. Indeed in *4'33"* the process of 'concert-halling down' sounds could be said to be the object of attention. By staging such a radical work in a concert hall, Cage, after Brecht, can be considered to be enacting a battle between the piece and its institutional frame. In Cage's *4'33"* the institutional struggle is evident, and indeed this work marks a shift in the established, institutionalised rituals of performance in the classical genre. The American pianist David Tudor's (1926-1996) first interpretation of the score's division into movements, performed on 29 August 1952, which he marked with opening and closing the piano lid, as well as being rather humorous, made even more apparent the distance between what the expectations of a traditional concert were and Cage's intentions.

1.4.5. Social aspects of Cage's experimental music.

When discussing the purpose of composing Cage claimed there was 'no purpose. Sounds', further explaining that 'nothing is accomplished by writing, playing, or listening to music'[84]. Indeed, having a purpose would have implied the application of notions of success and failure in these activities, which would have effectively stopped the sounds from being heard as themselves. Cage claimed:

> 'A sound does not view itself as thought, as ought, as needing another sound for elucidation, as etc.; it has no time for consideration –it is occupied with the performance of its characteristics: before it has died away it must have made perfectly exact its frequency, its loudness, its length, its overtone structure, the precise morphology of these and of itself. Urgent, unique, uninformed about history and

theory, beyond the imagination, central to a sphere without surface, its becoming is unimpeded, energetically broadcast'[85].

I claim that, in line with the typically modernist pursuit of a socially and politically engaged music, such an interpretation of sound by Cage holds considerable socio-political connotations. These tendencies would become more explicit in Cage's later writings influenced by the American architect and theorist Buckminster Fuller (1895-1983) and the American author and philosopher Henry David Thoreau (1817-1862). Cage indeed saw analogies between music and society. For example, he interpreted Schoenberg's serial method as representing the achievement of a social equality that functional harmony had negated; whilst tonal harmony created a hierarchical subdivision of a group made of unequal material, serialism distributed relative functions amongst equal groups of material[86]. Integration, a dominant theme in Western politics in the 1960s, had also been a musical concern for Cage since his structuring of pieces according to duration, which had engendered the inclusion of non-musical sounds. In this respect, I argue that Cage's interpretation of sounds as an entity concerned with their realisation could be construed to articulate issues in the politics of sexual identity. Cage personally dealt with such issues in the re-orientation of his sexuality after the divorce from his wife Xenia and the entering of a same-sex relationship with the American dancer and choreographer Merce Cunningham (1919-2009). Cage's understanding of the urgency with which a sound sought to perform its characteristics may be translated in terms of the politics of coming out. Cage's refusal to affect the production and reception of sound as informed by history and theory also suggests the rejection of social customs, institutionalised religion, as well as a hetero-normative sexuality. This could be interpreted to further mediate the politics of the gay and lesbian movement, catalysed by the Stonewall riot of 1969 amidst the emergence of the civil rights movement in the 1960s. Gender issues in experimental music are yet to be fully

researched, however I believe that this is a fundamental aspect in music that the scholarship on the genre needs to address. In this context Oram's appraisal of technology in feminine and feminist terms is also significant (see chapter 2).

1.4.6. Cage's use of electronic technology.

For Cage technology had been instrumental in achieving the inclusion of unorthodox sounds. Indeed, electronic technology had allowed any sound detectable to human hearing to be made available to musical purposes. Photoelectric, film, and electromechanical means thus had opened up a 'total sound space'[87] in virtue of their control over sound parameters. This had created the opportunity to undergo new sound experiences, which to Cage had broader repercussions. Magnetic tape, for instance, revealed that 'musical action or existence can occur at any point or along any line or curve or what have you in total sound-space; that we are, in fact, technically equipped to transform our contemporary awareness of nature's manner of operation into art'[88]. Cage also believed that electronic technology had opened up conceptual possibilities in the realisation of sound. Indeed he stated that 'any design repeated often enough on a soundtrack is audible. Two hundred and eighty cycles per second on a soundtrack will produce one sound, whereas a portrait of Beethoven repeated fifty times per second on a soundtrack will not only have a different pitch, but a different sound quality'[89]. This understanding was also a fundamental characteristic of drawn sound and Oram's work as discussed in chapter 2. However, the search for 'any sounds of any qualities and pitches (known or unknown, definite or indefinite), any context of these, simple or multiple' [90], hardly equated to a *laissez faire* policy in administering the new soundworld. In fact, this search rather followed a historical responsibility[91]. Thus, Cage lamented the adaptation of electronic instruments to imitate the eighteenth and nineteenth century

models. For instance, in the case of the Theremin, Cage spoke of a 'censoring' of its range of sounds[92]. This remark was perhaps motivated by the attempt to make the Theremin sound like a violin under the influence of the virtuoso player Clara Rockmore (1911-1998), an ex-violinist who was the most notable performer of the instrument and who helped its inventor, the Russian Léon Theremin (1896-1993), to develop the instrument further. Recalling or extending known musical possibilities, as did Schaeffer's phonogène in Cage's view, was thus a 'shutting the door of possibilities opened up by magnetic tape'[93].

1.5. The avant-garde and experimental music *querelle*.

In the context of self-criticism, extremism, and decreasing audience a debate around avant-garde music and experimental music developed, a debate that resembled the *querelle des Anciens et des Modernes* during the seventeenth century. This new *querelle* was also focussed on the relationship with the past and with tradition, and was articulated on determining the differences in the stances that the avant-garde and experimental music practices demonstrated towards them. It is hardly surprising that the parties in the avant-garde and experimental music *querelle* sought to sever their mutual ties. This had indeed been a strategy previously adopted by various movements in modernism in order to authenticate their innovation and validate their work among the fragmentary, competing, and often overlapping manifestos of the various groups.

1.5.1. The appraisal of Webern.

One instance of the competing interpretations that united and at the same time divided avant-garde and experimental music was the appraisal of Webern. For both Boulez and

Nono, Webern represented an important figure in the 'historical logical development' of music. As a pupil of Schoenberg, Webern followed his teacher's serialist technique, applying it even more strictly than its inventor. In fact, in works like the Symphony Op. 21, Webern's search for symmetry led him to build a tone row, which would determine the structure of the second movement (the variations movement) and structures at local levels. In his Concerto for Nine Instruments, Op. 24 Webern was inspired by a Latin proverb of which each of the five words (*Sator arepo tenet opera rotas*) when arranged in a square could be read vertically or horizontally, left to right and vice versa when arranged as a 'magic' square. Webern adopted a painstaking attention in establishing a logical, self-contained structuring principle, while also being aware of its inaudibility. Despite the avant-garde claiming Webern as a precursor, he was also considered a forerunner of the New York School (as Cage and his circle were also known as). Indeed Webern made use of silence in his work. In fact, timbre and silence became the prominent features of his music thanks to a number of performance directions he used. Among these were registral and textural disjunction, the use of instrumental effects such as *col legno* and *spiccato* in the strings, and the use of mutes in all parts. Webern also made use of dissonant intervals and no repetitions, as well as a prominent employment of the *pianissimissimo* (ppp) dynamic range. This was an appealing feature for American experimentalists as it pointed to a conscious inclusion of silence in music. The different appraisal of the significance of Webern by avant-gardists and experimentalists alike stressed some of the differences between the two genres: the Darmstadt School admired the rigour and degree to which Webern had applied the serial principle to achieve symmetry through the extension of the control exercised on the structure. On the other hand, the New York School welcomed Webern's introduction of silence and used it as compositional material, an element they perceived as disregarded by the serialists, whose series Cage lamented did not have 'enough nothing in it'[94].

Nonetheless, as Boulez pointed out, the 'neutrality of sound' theorised by Webern appeared somewhat opposed to Cage's concept of sound coming into its own. In fact, where in Webern sounds depended on their context to acquire meaning, in Cage the happening of a sound was enough to authenticate it[95]. However Cage claimed that in his music 'each thing is itself, that is its relations with other things spring up naturally rather than being imposed by any abstraction on an artist's part[96]. Thus for Cage the context of a sound, the relationships it established with its aural surroundings were still fundamental in understanding the in-itself of a sound.

1.5.2. Boulez and Cage.

The disagreement between Cage and Boulez marks another instance of the dispute between experimentalists and avant-gardists. For Schaeffer serialism had been indeed instrumental in creating the grounds for the acceptance of new sonic objects[97], a position that was seconded by Cage, who asserted that serial works did 'open the ear'[98]. Nonetheless Cage blamed European composers for failing to develop what had been the innovation of *Klangfarbenmelodie*[99]. However, in Boulez's views, Cage's developments represented a regression, which failed to develop further previous techniques[100]. Although Cage echoed the anti-aesthetic discourses of Boulez, his theorising a musical composition that did not organise the note-to-note succession according to personal choice (thus not informed by memory, psychology, and individual taste) led him to adopt a position that was increasingly at odds with Boulez's beliefs. From the early fifties, Cage introduced chance procedures at first just to determine the relationship between the sounds, and later to determine their characteristics, structure, and form. This was a step too far for Boulez, who found the idea of unrestrained chance 'unbearable'[101]. To Cage's announcement that 'chance comes in here to give us the

unknown'[102], Boulez said that he believed that 'chance must be extremely controlled; by using tables in general, or series of tables, I believe that it would be possible to direct the phenomenon of the automatism of chance, whether written down or not…there is already quite enough of the unknown"[103].

For Boulez authenticity coincided to the transition between the unforeseeable and the necessary, the former being a stage towards the realisation of a work[104]. Boulez thought that chance equated to 'carelessness'[105]. Chance, thus, could never have been a part of a finished musical work for Boulez. This could be seen as contradicting his definition of genuine artworks as 'those in which one can never come to an end…and when all is said one still has said nothing, and one will never say anything'[106], a statement that is fundamentally Cageian. At any rate, while Cage saw the relinquishing of personal intervention as a legitimising strategy, Boulez believed that the composer ought to have retained control of production. Despite the disagreement between Cage and Boulez, they both agreed about harmonic organisation: functional harmonic structure had in fact become for both an untenable vestigial system of the past since Wagner[107]. With the freedom of the employment of scales applied by Debussy and the 'neutrality of sound' by Webern, Boulez envisaged the emergence of a theory of sound complexes – aggregates of sounds, whose characteristics (timbre, duration, intensity) depended on their individual components. Boulez identified this occurrence as the end of the 'harmonic era' of Western art music[108]. In 1950, Boulez wrote to Cage:

> 'In certain polyphonies, I shall also make use as you do in the music you are in the process of writing, of sampled sonorities i.e. sound aggregates, linked by a constant but movable within the scale of sonorities. Like you, too, and as in my Quartet, I can build the construction with all the possibilities afforded by the material, in other words a construction where the combinations create the form, and thus where the form does not stem from an aesthetic choice'[109].

1.5.3. Europe versus the US.

The disagreement between Cage and Boulez had a geo-political resonance, framing the discussion as an opposition between the United States and Europe, as 'American' experimentalism and 'European' avant-garde. Such geographical divide were differently supported by various authors (Metzger 1959, Ballantine 1977, Benitez 1978, Mauceri 1997, Nicholls 1998, and Nyman 1999). In 1958 Cage commented how a change in European music was being brought about by 'the silences of American experimental music'[110]. Indeed the concepts of chance, openness, silence, and indeterminacy promoted in the works of the New York School, influenced greatly the European avant-garde. Stockhausen, in particular, was very receptive to Cage's influence. The German composer first met Cage in Cologne in 1954, when Cage was touring with Tudor. Subsequently Stockhausen dedicated his *Klavierstücke V-VIII* to Tudor, who also premièred his *Klavierstück XI* (1956). All of these pieces demonstrated the influence of Cage. For Ballantine, Tudor represented a link between avant-gardism and experimentalism in virtue of his role as a partner, rather than simply an interpreter, for Cage as much as for Stockhausen[111]. Stockhausen himself could be considered to cover an intermediate role between the serial and indeterminate aesthetics of Boulez and Cage, thus undermining the binary opposition that has been commonly accepted between experimental music and avant-garde music.

In addition Cage's admiration for Satie also pointed to a shared aesthetics that crossed national boundaries. Mauceri was conscious of the fallacy of the distinction between an American music as developed by Ives, Varèse, Cowell, Harrison, Partch, the New York School and the minimalists – Terry Riley (1935-), Philip Glass (1937-), and Steve Reich (1936-) – vis-à-vis the Europeans such as Stockhausen, Schaeffer, Boulez, Luciano Berio (1925-2003), Henri Pousseur (1929-2009), and Iannis Xenakis (1922-2001).

Indeed he mentioned the debt experimentalism owed to Italian Futurism, Dada, and the work of Marcel Duchamp (1887-1968). I also add the danger in making distinctions based on geographical location, because of the obvious disregard of differences between composers allegedly belonging to the same faction, such as Partch and Reich for instance.

1.5.4. Avant-garde versus experimental.

For both Mauceri and Ballantine, an important distinction existed between the avant-gardism and experimentalism in their different relationship with institutions. Indeed their respectively collaborative and polemical stances were seen as indicative of their dissimilarity. Hal Foster claimed that while the avant-garde focused on the conventional, the neo-avant-garde (or experimentalism) dealt with the institutional[112]. This may indeed be a result of the absorption of the historical avant-garde into the very system that it aimed at destabilising, but on the other hand, in avant-garde music the discourse of rupture with tradition never reached the extremity of its art and literature counterparts. Boulez and Stockhausen were more than willing to participate and contribute to tradition, despite their clear antagonism to what the German literary critic Peter Bürger called 'bourgeoisie aesthetics'[113]. For Mauceri, Ballantine's configuration of the two genres as complementary would be untenable. Indeed for Ballantine while avant-gardism was more systematised and hypothesis-laden the other explored the implications that such an attitude raised. On the other hand, Mauceri claimed that experimental music hardly indicated a homogeneous practice and a unified methodology[114]. The same could be said of the avant-garde, whose attitude also changed over time. For instance the scientific terminology initially adopted by the Darmstadt School was later criticised within its members. The American physicist John Backus

(1911-1988), for instance, argued that the content of *Die Reihe* was 'nothing more than a mystical belief in numerology'[115]. In any case Nicholls was among those who recognised a trend among European composers in adapting experimental music practices. For instance, he argued that Stockhausen had employed mobile form in *Momente* (1961-66), while Berio used graphic scores in his *Circles* (1960) and *Sequenza III* (1966). These works pointed to a shared aesthetics identified by Nicholls as coinciding to a 'prospective' (that is progressive) nature[116]. Therefore, it seems contradictory that Nicholls would consider experimental music to be completely removed from tradition whilst he deemed avant-garde to occupy its extreme regions[117]. The very positioning of experimental music with regards to 'Eurocentric art music', however radical, determined its strong connection to it. For instance, a piece like *Duo for Pianist II* (1958) by Wolff was scored specifically for the piano, which is a recurrent instrument in Wolff's compositions, and an instrument that is central to Western art music. Furthermore the score contains traditional notation, albeit to be interpreted in an unorthodox manner. To be able to perform the piece thus, an interpretative process that relies on knowledge of traditional music is necessary.

1.5.5. Michael Nyman's *Experimental Music: Cage and Beyond.*

A fundamental text in the debate between experimentalism and avant-garde music is Michael Nyman's *Experimental Music: Cage and Beyond* first published in 1974. This text is an important reference for the discussion of the philosophy and practice of experimental music in the 1960s and 1970s. However Nyman traced the beginnings of experimental music to Cage, and made no mention of Schaeffer's theories. Nyman also failed to mention Davies as an important representative of experimental music in the UK. In the book Nyman heavily criticised the group of composers belonging to the

Darmstadt School. Nyman's text added a strong geographical aspect to the distinction between avant-garde and experimental music, the former identified as Eurocentric, and the latter localised mainly in the US. The geographical location of composers such as Stockhausen and Berio allegedly connected them to a Germanic tradition, which was perceived to be stifling. However although Nyman was British, he was a supporter of the experimentalist cause. This could be perhaps interpreted as another instance of Britain's ambiguous position between the two camps.

It was of primary importance to Nyman to assimilate avant-garde music to the past, thus engendering a discourse of rupture in experimental music. Nyman described the avant-garde as continuing a 'post-Renaissance tradition'[118]. Thus assimilating composers such as Boulez, Xenakis, Berio, Mauricio Kagel (1931-2008), and Stockhausen to a musical tradition, which effectively marked them as *antiqui*. The principal figures that for Nyman especially substantiated this new *querelle* were Cage and Stockhausen. Stockhausen was perceived to be particularly threatening to the clear distinction between these two genres, because of his employment of experimental methods. His practice, thus, was highly destabilising as it endangered the validating break with tradition that Nyman claimed for experimental music, thus diminishing its innovative aspects. Nyman also addressed the issue of what an authentic experimental procedure was. For instance, Stockhausen's plus-minus system – a more open type of composition that focused on process, used in pieces such as *Spiral* (1968) – although being acknowledged as similar to the systems devised by the New York School, was nonetheless appraised as encouraging the establishment of a functional relationship among its elements. This was a fundamental flaw for Nyman, who interpreted functionality as the distinctive quality of the tonal system[119]. Functionality thus became an unappealing trace of the Classical-Romantic musical tradition. Indeed functionality,

according to Nyman, obliterated the sounds used and invested them with a role, which was allegedly related to the development of sections in the sonata form[120]. Nonetheless, as discussed earlier, both Cage and Boulez agreed on the issue of functionality. Furthermore, with regards to Stockhausen's 'Moment form', which consisted in an attempt by the German composer to deliberately avoid a linear narrative, Nyman simply commented that 'once a European art composer, always a European art composer'[121]. Such claims by Nyman demonstrated the intense need to draw distinctions between the two genres, at the cost of using prejudice as a justification.

1.5.6. Joaquim Benitez's classification of contemporary music.

In his article 'Avant-Garde or experimental?' published in 1978, Benitez criticised Nyman's historical terminology for implicitly associating composers such as Kagel and Stockhausen with composers he deems to be more traditionally-minded such as Harrison Birtwistle (1934-) and Peter Maxwell Davies (1934-)[122]. Benitez thus sought to offer a more articulated view of the music of the twentieth century, albeit still strongly biased towards supporting the seemingly necessary emancipation of experimental music from the avant-garde. Benitez, in fact, distinguished three kinds of contemporary music: traditional, avant-garde, or experimental. These strands were declaredly classified according to an aesthetic attitude rather than according to the methods they employed[123]. Benitez defined traditional music as remaining faithful to the Classical-Romantic heritage, whilst the avant-garde sought to openly refute this continuity. Like Nyman, Benitez quotes Stockhausen's words with regards to indeterminacy (albeit with different editorial interventions) from an interview with the author Jonathan Cott, in which Stockhausen said:

'So many composers think that you can take any sound and use it. That is true insofar as you really can take it and integrate it and ultimately create some kind of harmony and balance. Otherwise it atomises…You can include many different forces in a piece, but when they start destroying each other and there's no harmony established between the different forces, then you've failed. You must be capable of really integrating the elements and not just expose them and see what happens'[124].

Nyman's contention was that Stockhausen believed sounds needed to be integrated to create harmony and balance, which according to him highlighted a formalistic tendency typical of the avant-garde. This allegedly confirmed a difference in the aesthetic emphasis of experimental music, which sought a more 'natural' development in music[125]. However Nyman did not seek to understand further what Stockhausen meant by harmony, as well as giving no further clue as to what 'natural' meant. Benitez, on the other hand, underlined the subjectivity (or 'responsibility') that Stockhausen's words entailed[126]. The experimentalists, in fact, were said by Benitez to have relinquished the intentionality expressed by Stockhausen and had rather directed their attention to the material of music and its experience – thus he characterised their approach as transcendental. To achieve such goals Benitez said the sound of experimental music tended to resemble, or indeed coincided with, natural sounds as in the *objet trouvé* method[127], a description that in fact applies to Davies's work as will be discussed in chapter 5. Benitez argued that the indeterminacy of scores of the New York School by relinquishing the control over the resulting music, negated intentionality, which was understood as the essential principle of the whole of the Western art music experience[128]; intentionality was described as 'the piece of music as an intentional act of the composer'[129]. Indeed, as mentioned before Cage sought to escape personal taste, memory, and psychology – faculties burdened with the weight of tradition[130]. Nonetheless it is arguable to what extent Cage really managed to relinquish authorship. It is however clear that indeterminacy systematised the degree of fixity in the realisation of a musical piece by allowing a variety of options in its execution at different stages of

its process. This however, as argued by the curator Nicolas Bell, was a characteristic of many pieces of traditional Western art music, as for example in the score of *Orfeo* (1607) by Claudio Monteverdi (1567-1643) where the instrumentation was 'open'[131]. This was however more a pragmatic choice rather than an aesthetic choice for Monteverdi. In any case that the relative achievement of indeterminacy was received with exaggerated terms of appraisal should not surprise us, since innovation was a crucial validating factor in modernism. Nonetheless, having established indeterminacy as a point of distinction, Benitez contradicted himself when discussing the music of Stockhausen in the framework of Susumo Shōno's category of chance procedures. Shōno's categorisation sought to establish degrees of indeterminacy in musical compositions. Benitez listed Stockhausen's *Klavierstück XI* (1956) as a type 2-b composition, which indicated open form works[132]. In the piece, the succession of each segment (nineteen in total) was determined not by the composer, but by the performer, who randomly[133] selected each successive segment. According to Benitez the high degree of detail with which Stockhausen notated each segment failed to make this piece experimental, because of the control that it retained[134]. Nonetheless in this piece although the durations were notated precisely, the way each fragment was played depended on the instructions read by the player when leaving the fragment just played. Thus a fragment could have been played with many different kinds of tempo, articulation and dynamics even though on a local level the durations were fixed. In support of his case, Benitez mentioned the comments of Tudor, to whom the piece was dedicated, and who gave the première of the piece in 1957 in New York. Tudor's reaction was reported to have been less than favourable. In fact he was quoted as expressing his shock upon discovering that the rhythmic values had been notated and to have frantically tried to get out of the 'four walls' that the piece represented to him[135]. In spite of these alleged shortcomings, Benitez explicitly credited Stockhausen with having effectively used

indeterminacy in his intuitive music, which was said to be an example of 'music truly "indeterminate of its performance"' and falling in the category 2-c in Shōno's system[136]. Thus Benitez granted Stockhausen's text scores a high degree of unintentionality, therefore further undermining his attempt at charging Stockhausen with holding onto responsibility in his work. Furthermore, Stockhausen did not seem primarily concerned with intentionality when he described his reaction to *Mode de valeurs et d'intensités* (1949) by the French composer Olivier Messiaen (1908-1992). Indeed, as the musicologist Paul Griffiths (1947-) recounted, Stockhausen's reaction to hearing Messiaen's piece was a predominantly sensual experience, appreciating the impression that the sounds gave as existing independently from each other, an experience that for Stockhausen had the effect of a revelation[137]. Undermining further the clear distinction between experimental music and avant-garde, Griffiths went as far as suggesting that both serialism and indeterminacy originated in Cage. Indeed Griffiths speculated that Cage's description of sound as possessing a quaternary nature (characterised by duration, amplitude, frequency, and timbre), as expressed in the text of 'Forerunners of modern music' published in 1949, offered a conceptual basis for a total serialism and possibly an inspiration for Messiaen's *Mode de valeurs*. Indeed Griffiths reports that Cage had performed his *Sonatas and Interludes* for Messiaen's class on 7 June 1949 and again at a soirée where Boulez gave an introduction, which specifically acknowledged Cage's division of sound to parameters[138]. The stress that Nyman and Benitez put on the frustration of functionality in music and the decrease of intentionality in its realisation, pointed to an increasingly heightened concern with subverting the teleological organisation of art and of its relationship with musical history. Integrating the new with the old was a discourse that seemed still plausible for the musical modernists[139] and to a certain extent for the avant-garde, but increasingly less so for experimentalists.

1.6. Electronic technology.

1.6.1. Technology as a conceptual framework for experimental music.

Science greatly contributed to building a discourse of legitimacy in modernist musical practices. Technology, as applied science, became the material framework through which to authenticate music. Schaeffer, Cage, and Stockhausen made extensive use of electronic technology, which acted as a means of renewal. Technology also offered a conceptual framework through which it was possible to understand sound. Indeed Cage's *4'33"* was completed after the revelatory experience Cage had while visiting the anechoic chamber at Harvard. It was the state of silence of this environment that made him formulate his theory of silence (that is the impossibility of it). Such a state was only possible to achieve with the help of technology. The understanding of sound as made of components, rather than being an inseparable entity, could only have been theorised in an age of increasing access to electronic technology. This technology indeed allowed for the isolation of aspects of sound, such as frequency, loudness, and spectral content. Albeit for different reasons, Cage and Werner Meyer-Eppler (1913-1960) (in his book *Elektronische Klangerzeugung: Elektronische Musik und synthetische Sprache* published in 1949) were among the first to theorise the parametrical nature of sound at the end of the 1940s. However Landy traced such theories as far back as the isorhythmic motets of Guillaume de Machaut (1300-1377)[140], where Machaut used a repeating rhythmic pattern (the *talea*) to a fixed series of pitches (the *color*)[141]. Such attention to the division of sound (and music) in measurable and quantifiable values in the twentieth century pointed to an increasing control of all the aspects of sound and their formalisation. This, however, paradoxically resulted in a loss of control of the aural outcome, which in

experimental music favoured unpredictable results, as seen in Cage's unorthodox sound sources. Such out-of-control results are also currently courted in science. The French professor Pierre Dupuy, for example, claims that the traditional demiurgic wish to achieve divine creation has developed into setting up systems that are capable of self-replication and self-complexification. These creations are authenticated by their capability to surprise their own engineer[142]. Therefore algorithmic and autopoietic systems in music could be said to participate in the aesthetics of experimentalism. Scores like the transparent sheets used for the *Imaginary Landscape* pieces could also be considered as matter-of-fact algorithms. Insofar as it constructed a non-subjective discourse, indeterminacy appeared close to the claim of objectivity in the sciences. However the repeatability of the experiment, which is a fundamental aspect of the experimental method, appears to go against indeterminacy.

Both Mauceri and Landy found the purposelessness advocated by Cage problematic as it had discrepancies with the scientific experimental method[143]. For instance, for Mauceri, music, unlike science, had questionable objectivity[144]. This discourse, however, failed to address questions concerning the nature of objectivity, whether there is such a thing as an objective perspective formalised in the sciences, or whether this is still underpinned by beliefs, assumptions, or even irrational processes. If the latter were the case, would the whole process be degraded? And if that were so, would that not demonstrate the oppressive structure on which scientific discourse is based? This leads to more general epistemological questions about the possibility of knowing the world, and whether a system (as the experimental method, or a technology) can help us to know it, rather than ultimately only managing to reveal the world the system itself has created. This would, as Collins and Pinch stated, only expose the limits of the procedures followed (see section 1.1.).

The German composer and theorist Herbert Eimert (1897-1972) gave a contrary description of the impact of electronic technology as happening according to a historical narrative underlying the evolution of musical thinking. For Eimert this was a principle to which new sonorities were subordinated, and which revealed points of contact between traditional and electronic music[145]. Indeed the adoption of electronic technology in music was also engendered by the new sonorities that chromaticism alluded to, to Schoenberg's *Klangfarbenmelodie*, as well as to the greater use of percussion instruments. Eimert's views are comparable to those of Benjamin, who believed that the accomplishment of cinematography had been anticipated by Dadaism, claiming that 'Dadaism attempted to create by pictorial – and literary – means the effects which the public today seeks in the film'[146]. However, as Palombini observed, in Eimert's view technology was a neutral tool in the hands of the composer, who used it to exercise his will[147]. This discourse in fact disregarded the different material framework that electronic technology offered and did not address the question of whether technology can ever be neutral. Like Eimert, Oram and Varèse also shared such a Promethean view of electronic technology (see chapter 2). Similarly for Schaeffer electric technology called for a renewal of musical form, ends, and materials. He said:

> 'Why twelve notes when electronic music has introduced so many more? Why series of notes when a series of sonic objects is so much more interesting? Why the anachronistic use of an orchestra whose instruments are handled with such obvious anti-naturalness by Webern and his imitators? And above all, why limit the horizon of our research to the means, usages and the concepts of a music after all linked to a geography and a history; certainly an admirable music but still no more than the Occidental music of the last few centuries'[148].

The marked optimism with which electronic technology was initially met in modernist music had somewhat evaporated by the late 1960s as demonstrated by Davies's work (see chapter 5). Indeed around that time the innovative force of electronic technology had been co-opted by capitalist technology and a more critical view of what was possible to do with such means was developing. Such a view could be described, after

professor Paul Durbin, as Icarian[149], from the Greek myth of Icarus, who had succumbed to the excessive ambition of the possibility of a technological artifact.

1.6.2. Experimental music as laboratory music.

Landy suggested that the advances in the electronic technology in the twentieth century coincided with a surge in experimental activity[150]. The adoption of electronic technology in experimental music significantly characterised the genre. Indeed, Metzger defined experimental music as laboratory music and engineer music[151]. This definition aptly described the work of Schaeffer and that of Lejaren Hiller (1924-1994) and Leonard Isaacson[152]. Hiller and Isaacson were based at the University of Illinois and worked on the Iliac computer. This computer was able to generate, modify, and select material to compose a musical score for performance by a string quartet, which they called the *Iliac Suite* (1957)[153]. Mauceri observed that the *Iliac Suite* appealed 'to the authority of science to legitimate this advocacy'[154]. This strategy had nonetheless also been employed by the European avant-garde, which further confirmed the modernist concern with the discourse of progress and science by both camps. The understanding of experimental music as situated in the isolation of a laboratory was further articulated by Metzger who claimed that in electronic music the experimentation happened in the studio and was thus prior to the realisation of the work, rather than coinciding with it[155]. For Landy, the lack of 'liveness' in tape music sanctioned an important qualitative shift. Indeed he claimed that 'after a tape has been mounted, a work of art is born which is…no longer experimental'[156]. In Landy's understanding of experimental music the research into sound was a continuous activity that did not stop with the realisation of a piece, but continued because of it. The discussion of an alleged static nature of a tape piece with its unchangeable parts was thus in contrast with the notion of the 'unfinishedness' of

experimental music. Mauceri further articulated this notion by defining experimental music as being 'unfinished' in the manner of an *étude*, which served the purpose of testing materials and methods.

1.6.3. The politics of electronic technology.

The use of electronic technology by many experimentalists necessarily had repercussions on the politics of music, a fact acknowledged generally by Ballantine and explicitly by Mauceri[157]. As discussed earlier (see section 1.4.4.), Ballantine traced a shared aesthetic purpose between Benjamin's theory of mechanically reproduced art, Brecht's Epic Theatre, and experimental music. Indeed Ballantine argued that electronic technology allowed experimental music to further accomplish the tasks that Brecht had set out in his theatre. Indeed the German composer Hanns Eisler (1898-1962), who collaborated with Brecht, saw technology as bringing about the collapse of performer and audience, technical method and content, thus threatening the establishment[158]. For Benjamin, technology allowed anyone to be an author, abolishing the dichotomy between art and the world. Thus the 'aura' of the artwork, residing in its ritual function, was destroyed[159]. The artwork was no longer unique, permanent, and idiomatic because of its technological reproducibility. The content of the artwork, for Benjamin, was related to its position in the production-process, bringing about the coincidence of the roles of author and producer – its quality thus residing in its social commitment. According to Ballantine sound technology allowed greater access to music, which undermined the notion of authenticity and the aura of the musical piece. Ballantine defined experimental music an 'art-science' in the same way that Benjamin considered film. Indeed, Ballantine drew a parallel between experimental music and Benjamin's reading of the camera. In the same way that the camera had brought to the fore

unconscious optics in using the microphone and loudspeaker sounds of a reduced intensity could be amplified, thus giving an equal importance to other sounds and revealing previously 'unconscious' sounds[160]. The use of the microphone as an enhanced ear for the detection of such sounds would be a crucial strategy adopted by Cage, Stockhausen, and especially Davies (see chapters 4 and 5).

1.7. Improvisation.

1.7.1. Cage and Improvisation.

Improvisation is an important issue to consider in relation to Davies's work. Furthermore, the role of improvisation has been a contested issue within experimentalism. Indeed, Cage declared that 'improvisation is generally playing what you know'[161], thus returning to memory and taste that he was deliberately trying to overcome with his indeterminate scores[162]. However, as Sabine Feisst has discussed, Cage's approach to improvisation was complex and developed significantly through the years, reaching a more embracing attitude since the 1970s[163]. Already with indeterminacy Cage had introduced in his works features that are closely associated with improvisation, such as unrepeatability. For instance, for a work that was indeterminate at the point of performance, Cage said that it was:

'necessarily unique. It cannot be repeated. When performed for a second time, the outcome is other than it was. Nothing therefore is accomplished by such a performance, since that performance cannot be grasped as an object in time. A recording of such a work has no more value than a postcard; it provides a knowledge of something that happened, whereas the action was a non-knowledge of something that had not yet happened'[164].

However, Cage intended to make improvisation a 'discipline'[165], which pointed to a desire to contain a practice that was perceived to be too close to self-expression. Wolff

echoed this sentiment when discussing his pieces *Edges* and *Burdocks* (which he considered to be indeterminate at the point of performance). He believed these scores to be necessary to guarantee unpredictable events[166].

In such works the presence of a score is thus to be considered a crucial element. For Cage and Wolff it was a mean to bypass tradition, but, on the other hand, the score also determined the identity of a piece as a 'composition', which, pointing to an author, lent it an aura of authority. Indeed, when questioned about his 'Experiments in Notation and Performance Process' (a series of single-page scores that consisted in graphic and literal notation), Brown admitted that the responsibility of the performance still rested with the composer, who, nonetheless extended 'an invitation' to the musicians to participate[167]. Such an invitation could however turn into an obligation, as Anthony Pay pointed out in an account of a performance of *Verbindung* from Stockhausen's text pieces *Aus den sieben Tagen*. According to Pay, Stockhausen, who had been asked by a player how to ascertain whether the score directions had been fulfilled, answered: 'I will tell you'[168]. Indeed Davies, in discussing the performance of *Intensität*, from the same collection of text scores, said that 'one remains aware of the composer influencing the performance from a distance through his score'[169].

In this respect the ethics of the open work, as envisaged by Umberto Eco (b.1932) as an 'act of improvised creation', appear dubious because the performer is asked to use discretion in interpretation and judgement on the form of the piece[170]. Indeed 'open' strategies such as text or graphic scores, rather than challenging the traditional roles of the composer and the performer, and the ontology of the work, could be said to further perpetuate these concepts. For instance, indeterminate scores still cast players as interpreters and composers as authors. An indeterminate score by Cage, or a Stockhausen's intuitive text piece, are still an *opus* (for instance, *Aus den Sieben Tagen* is

Stockhausen's *opus* number 26 in his catalogue). Indeed Eco himself described this kind of work as 'not an amorphous invitation to indiscriminate participation. The invitation offers the performer a chance of an oriented insertion [also described as personal intervention] into something which always remains the world intended by the author'[171]. This world was often very well known to the performer, and in fact Brown implicitly admitted to be writing for specific performers, whom he knew could deliver what was expected of them[172].

From this perspective, Eddie Prévost's claim that the open work is in reality 'enclosed improvisation' (a reference to the Inclosure Acts that created legal property rights to open fields and common land in the UK)[173] seems justified. In fact, Cage's belief that performers needed steering by a composer to avoid falling back on memory and taste and act 'like sheep rather than nobly'[174] needs to be challenged. Indeed, what Cage called 'dropping thoughts'[175] is not necessarily an empowering, liberatory gesture, but could also become a form of escapism, a renouncing of a conscious emancipatory pursuit, if not only a restriction of Cage's own predicament of 'no matter what eventuality'[176].

Prévost took issue with both Cage's indeterminacy and Stockhausen's intuitive music; according to him, neither composer relinquished their control over the music, their authorial right[177], and accused Cage of asserting his own views over the musicians[178]. Prévost's rejection of scores is total, as, according to him, even the subtlest of guidelines in compositions (which can include text or graphic scores) give music 'a repeatable flavour of composerly preoccupations'[179]. This stands in stark contrast to Cage's view that the score guaranteed unrepeatability. In fact, the mediation of a score for Prévost is both a limiting of the potential of sound in its organisation[180] and an impairment of the 'dialogical', social relationship between musicians playing together[181]. Furthermore,

Prévost is sceptical about the success of Cage's strategies in avoiding memory and taste, as he argues the ideas that the players end up playing are the composer's[182]. Philip Thomas similarly argued that the refusal of a personal expression paradoxically constituted the very individuality of the composer and the performer[183]. Moreover, Prévost proposed that such individuality was the reason why performers used these scores, because they otherwise lacked confidence in their own capabilities; this, according to Prévost, was the case with Cage's *Variations II*, which according to him was the work of Tudor's genius, albeit bearing Cage's name[184]. Furthermore, the discipline that Cage sought to establish in improvisation for Prévost could degenerate into a 'fetish of discipline'[185], which might be said to be institutionally encouraged and maintained.

1.7.2. The Concept of Improvisation.

Despite the debate emerging around the validity of improvisation within experimental music circles, it is noticeable that many theorists of improvisation seemed to speak the same language of the supporters of experimental music. For instance, Prévost's criticisms rested on an ultra-modernist lexicon that included concepts such as 'regress', 'disruption', 'stasis'[186], 'progress'[187], and 'experimentalism'[188]. Also it could be argued that Cage's very stress in avoiding personal expression was fulfilled in the collectivism of free improvisation. Collectivism seemed indeed a way to achieve Cage's 'anonymity and selflessness of work'[189], albeit Cage himself did not envisage this as a viable strategy. For Cage, experimentalism equated to an action whose outcome could not be foreseen, and according to Frederic Rzewski improvisation was 'all about being unable to foresee the causalities'[190]. Indeed the very word 'improvisation' etymologically means 'not forseen' (from the Latin *in provisus*), which could also be construed as a reference to the

predominance of visual information (as for instance codified in a score) that some forms of improvisation rejected. This again seems a better fulfilment of Cage's predicament than his own work, since in Cage the score established a dependence that was visual (that could be seen) if not strictly musical.

However, reducing the meaning of improvisation to 'that which cannot be (fore)seen' might be misguided. Vincenzo Caporaletti, for example, traced the historical emergence of the term 'improvisation', as a consequence of establishing the concept of composition; indeed he pointed out how the concept of improvisation did not exist before a notion of composition (from the Latin *cum-ponere*, to put together, to lay down together, objectivised in writing) had become more consistent towards the end of the Middle Ages[191]. The impact that notation had on music was thus considerable, offering control over other dimensions, such as the visual domain (having the parts laid out), temporal domain (the permanence of the score), and a sense of prospective (the functional control of consonance and dissonance). Thus for Caporaletti the opposition between composition and improvisation became a linguistic opposition between what could be *seen* and what could't be seen in advance (on a written score). The term 'improvisation' emerged therefore as part of a binarism that was historically and geographically formed and contingent[192]. In fact, Caporaletti traced the concept of composition to the work of Johannes Tinctoris who, in *Terminorum musicae diffinitorium* of 1473 described written counterpoint as *res facta* or *cantus compositus*, thus introducing the idea of a reification of creation[193]. Such description, however, also meant that the modality that had been for centuries the only option (the free singing of melodic lines on a *cantus firmus*), became only one of the options available, and was designated as *cantus super librum*. The concept of improvisation thus arose as a correlative 'other,' as antithetical to composition[194].

Composition has often been used as the reference to explain improvisation, which has commonly resulted in the latter being understood as provisory, incomplete, and superficial. Caporaletti, as well as many others, identifies the devaluation of improvisation in Western culture in particular from the second half of the eighteenth century, with the establishment of the ideal of faithfulness to the work, the *Werktreue Ideal*[195]. However, musicologists have disagreed over the relationship between composition and improvisation. For instance, Caporaletti notes how Ernest Thomas Ferand in *Die Improvisation in der Musik* (1938) separated the two using the criteria of notation[196]. On the other hand, Prévost has questioned whether this can be a satisfactory criteria of distinction, since in his view knowing what would follow each action matters more to the characterisation of composition than any written instruction (as could be the case in a memorised performance, for instance)[197]. Wanting to avoid a binarism between composition and improvisation, and believing that the concept of improvisation was a distinctively Western concept – characteristic of a culture that made a distinction between composition and performance[198] – Nettl proposed a model that sought to overcome the two terms. Indeed he placed composition and improvisation in a continuum that marked a temporal spectrum. Nettl spoke of 'rapid' and 'slow' composition: the former a 'spontaneous' but model-bound form of music making, the second a worked out form[199]. However, as Caporaletti has also noted, there are issues with this model: to begin with, Nettl seemed to have a biased perception of improvisation, which he described as 'not thought out'[200] and 'simply conceived'[201]; he then contrasted these understandings to a 'slow' composition that was 'carefully thought out'[202]. Thus, despite his efforts in avoiding a characterisation of composition as sophisticated and artificial and improvisation as primitive and natural[203], Nettl appeared to further re-inscribe these qualities in his categories. Although subsuming both practices under the aegis of one term, be that of 'composition'[204] or 'improvisation' (for

instance, Schoenberg's assertion that composing is a 'slowed-down improvisation'[205]), might not be a fruitful strategy, Nettl's assessment is important in highlighting the necessity for a conceptual model of improvisation, which is yet to be convincingly achieved.

Another approach in the definition of improvisation has been the distinction of improvisation from composition as part of an emancipatory project from the traditional concept of composition. In this view, the notion of a composition that is 'thought out', as described by Nettl, was assessed negatively, while the alleged capacity of improvisation to bypass rational thought was marked as a positive connotation. For instance, Rzewski has stated:

'One could say that composition is a process of selectively storing and organising information accumulated from the past, so that it becomes possible to move ahead without having constantly to reinvent the wheel. Improvisation, on the other hand, is more like garbage removal: constantly clearing away the accumulated perceptions of the past, so that it becomes possible to move ahead at all. The most basic technique of composition is that of transferring information from short-term memory to long-term: remembering an idea long enough so that one can write it down. This process of transference is also one of translation: reforming an impulse or feeling so that it can be expressed in some kind of symbolic language. The most basic technique of improvisation is that of short-circuiting this process of conservation: forgetting– momentarily at least– everything that is not relevant to the objective of expressing an idea immediately in sound. This process has more to do with spontaneous reflexes than with language'[206].

Thus the capacity to overcome consciousness that improvisation was perceived to have, unlike composition, made, according to Rzewski, the two practices 'quite different, even contrary, mental processes'[207]. Bailey, however, claiming that it was incorrect to describe improvisation as 'instant composition', since he deemed the two activities as different types and producing different results, rejected the belief that improvisation lacked forethought and preparation, which he believed to be implied in the adjective 'instantaneous'[208]. On the other hand, Stuart Jones has detected in expressions such as

'making it up as you go along', 'busking it', 'muddling through' part of a specific quintessentially British attitude and aptitude towards improvisation, what he calls a 'national pride in inventiveness'[209]. Prévost stressed a quality of ephemerality in improvisation when he stated that 'no music that recognisably persists over a long period can qualify, in a precise sense, as being improvised'[210]. The understanding of improvisation as unique, according to Sara Ramshaw, shared with the Derridean concept of invention a status as an event without precedent, constituted in its singularity[211]. However, the notion of improvisation based on an *ex nihilo* invention could be argued to reinforce the association of improvisation with the 'primitive'. Furthermore, these arguments raise questions as to how much work the term 'improvisation' can do, if it can encompass very disparate practices from preparation to spontaneous invention. Caporaletti, for instance, sought to develop a more nuanced understanding of different practices by distinguishing between improvisation and extemporisation, extemporisation intended as a musical text that has been elaborated and defined, but not fixed in written form; for Caporaletti extemporisation differed from interpretation because a text was pre-existent to the interpretation[212].

Finally, as Lee Brown has noted, one might appeal to the intentions of a musician in determining improvisation; for Brown improvisation is determined by questions such as: 'Does she think of herself as spontaneously fleshing out a work while remaining faithful to its composer's style? Or does she think of herself as exploiting a given musical structure as a point of departure for music of her own?'[213] This however stretches the concept of improvisation even further, and challenges the notion of a practice that can be distinguished from others and whose features can be generally agreed on. To confirm the problem of finding such an agreement over the concept of improvisation, during the second half of the twentieth century there have emerged

different 'kinds' of improvisation that can be related to experimental electronic music and the work of Davies; I will concentrate on the three most relevant of these: 'free' improvisation, 'non-idiomatic' improvisation, and 'meta-music'.

1.7.3. Free Improvisation, Non-Idiomatic Improvisation, and Meta-Music.

From the mid-1960s onwards there were a number of improvising groups that emerged in Britain such as AMM, Joseph Holbrooke, The Spontaneous Music Ensemble (SME), The People Band, and The Music Improvisation Company (MIC), among others. The formation of these groups was concomitant to the establishment of similar groups in the US and Europe (Gruppo di Improvvisazione Nuova Consonanza, New Music Ensemble, Musica Elettronica Viva, The Theatre of Eternal Music, and Sonic Art Group among others), pointing to a renewed interest in improvisation. Such interest originated in the aesthetic and political possibilities that improvisation seemed to offer within the context of Western art music. However, the importance of jazz in promoting improvisation needs to be acknowledged. In jazz the term 'improvisation' indicates a soloistic phrasing that develops within the framework of a piece. Such framework is offered by a 'head' (usually based on a 32-bar jazz standard or 12-bar blues pattern), which is played at the beginning of the piece, and which frames improvised solos. The improvisation is derived from the melody, scales, and arpeggios associated with the framework. From the late 1950s dissatisfaction with the limitations of jazz led to the development of what was termed 'free jazz', a term derived from the 1960 album *Free Jazz: A Collective Improvisation* by the American saxophonist Ornette Coleman (b.1930). Coleman identified the most important feature of this approach in jazz as the free group improvisation, which he traced back to the New Orleans' early bands, an approach that, according to him, had been lost with the big bands of the swing period[214]. Coleman

described a free group improvisation thus: 'When our group plays, before we start out to play, we do not have any idea what the end result will be. Each player is free to contribute what he feels in the music at any given moment. We do not begin with a preconceived notion as to what kind of effect we will achieve'[215]. These ideas were crucial in the development of what was called 'free improvisation' or 'total improvisation', terms that have become associated with the aforementioned British groups. Many of their representatives had in fact a background in jazz. For instance, AMM's Lou Gare and Keith Rowe had been member of the Mike Westbrook Band, and Prévost and Gare had been members of a hard bop quintet; Joseph Holbrooke, formed in 1963 by Bailey, Bryars, and Oxley, initially played conventional jazz and by 1965 was playing totally improvised pieces. Many, however, have drawn a distinction between free jazz and free improvisation, among them Prévost[216]. According to George Lewis the term 'free improvisation' pointed to a 'native model' of improvisation, however influenced by Afrological forms[217]. Such a model (which Lewis called 'Eurological')[218] was said to be also influenced by avant-garde and experimental music (Webern, Stockhausen, Cage)[219]. Free improvisers thus distanced themselves from an African-American jazz heritage, and purposely resisted being associated with any 'idiomatic' musical traditions. Caporaletti also argued for a distinction between the improvisation developed within the 'serious' Western music tradition, and that of African-American culture, but on the grounds that the quasi-scriptural prescriptions that characterised the improvisations of groups such as the Gruppo Nuova Consonanza, were of a different nature to those of groups such as the Art Ensemble of Chicago, the Association for the Advancement of Creative Musicians (AACM), or the Black Artist Group of St. Louis[220]. Nonetheless, in common with free jazz, free improvisation had the intention of dissolving the hierarchies within the ensemble, the abandonment of strict tonal forms and structure, and an unorthodox approach to the

musical instrument. Indeed both Leo Smith's *Notes: 8 Pieces* and Cardew's *Toward an Ethic of Improvisation*, as noted by Bailey, bore witness to the possibilities that were envisaged within free improvisation to escape from the rigidity and formalism of their respective musical backgrounds. The need to depart from a restrictive musical praxis, is also evident in Bailey's theorisation of a 'non-idiomatic' improvisation. According to Bailey:

> *Idiomatic* improvisation […] is mainly concerned with the expression of an idiom – such as jazz, flamenco, or baroque – and takes its identity and motivation from that idiom. Non-idiomatic improvisation has other concerns and is most usually found in so-called 'free' improvisation and, while it can be highly stylised, is not usually tied to representing an idiomatic identity[221].

Bailey maintained that non-idiomatic improvisation had 'no stylistic or idiomatic commitment. It has no prescribed idiomatic sound'[222], and declared not to be against a musical language, but against the restrictive rule of such language[223]. Bailey's formulation of a 'non-idiomatic' improvisation according to Ben Watson was not a claim about a finished piece of music – a product – but was to be understood as a practical programme for effective improvisation, a process[224]. Indeed Rogério Costa claimed that:

> 'free improvisation is only possible in the context of a quest to overcome the idiomatic, the symbolic, the representation, the gestural, the systematic, the controlled, the foreseeable, the static, the identified, the hierarchical, the dualistic, and the linearized, in favour of the multiple, the simultaneous, the unstable, the heterogenous, the motion, the process, the relationship, the living, the energy, and the material itself'[225].

For instance, in the Music Improvisation Company Bailey said that the live electronics were introduced into the group 'as a further extension of the alienation, in material and sounds, from idiomatic improvisation; a continuation of the search for a style-less, uncommitted area in which to work'[226]. However, Bailey said that Davies's adoption[227]

of the 'amplified long string' resulted in a similar guitar open-string sound that he was at pains to avoid[228]. The avoidance of past forms, the negative understanding of the present practice as a rejection of tradition ('non-idiomatic'), as well as the valorisation of originality and unpredictability, revealed the modernist underpinning of Bailey's theories. From this perspective the kind of extreme improvisation that Bailey envisaged can be said to be experimental, although he rejected the notion that improvisation could be considered experimental on the grounds that innovation was not a predominant concern in this practice[229].

Prévost's sharp criticism of the notion of a non-idiomatic improvisation will be discussed shortly, however, it is noticeable how his theorisation of a 'meta-music' shares with Bailey's term a modernist ethos. Meta-music is the term that Prévost has used to describe his understanding of free improvisation, and which he characterised as the searching for a sound, an investigative ethos, and music as praxis[230]. This music for Prévost fit within the logic of 'dialogic heurism' and 'heuristic dialogue'; the former term indicated the intention of making and listening to music 'as if for the first time'[231] (supported by the guiding principle of playing 'as if there had never been any such thing as music before')[232], while the latter described the process of interaction and exchange that took place within an improvisation. For Prévost a meta-musician was 'always an experimentalist'[233], seeking to imagine 'possible worlds and express them through the medium of sound'[234]. Prévost also seemed to echo Cage when he said that the task of the (meta-)musician was to 'get beyond oneself', but he clarified that every note was intentional, although unforeseen[235].

Despite the disagreement over experimentation, both meta-music and non-idiomatic improvisation exclude past music as material in free improvisation, with Prévost arguing:

'the use of old forms, even if fragmentary and disembodied, are extremely difficult to incorporate into a meta-music. The problem is that such materials reveal moments of music-past. Used off-the-shelf in an unthinking manner, they not only reveal paucity of thought but deep misunderstanding of what improvisation is about. It is no voluminous bag into which anything will fit'[236].

Thus meta-music, like 'non-idiomatic' improvisation, was understood as seeking to 'remain in a state of play, in potential and not answerable to tradition or authority'[237]. Prévost's argument for a need to integrate material, echoes that of Stockhausen on chance, which was interpreted by Nyman to mark the schism between avant-garde and experimental music; in this instance, it brings to the fore the rules that governed 'free' improvisation. Nonetheless, according to Prévost, free improvisation consisted of a music that is 'free of traditional restraints, free of conventional instrument-use, free of conventional instruments and conventional sound sources'[238]. However, such programmes of freedom as envisaged by the theorists of free improvisation are to be regarded with suspicion. As claimed by Max Stirner (1806-1856) 'the craving for a particular freedom always includes the purpose of a new dominion'[239]. Tony Oxley claimed:

'when certain musics are referred to by critics as 'free,' I don't believe it is possible in the way they describe it …The implication of free music is anything goes. You can say, Do what you like. But of course you are doing what you like, but what you like is not just thrown in because you yourself don't know what to do. You have what you're doing under control. You build a language and you work with that language, you improvise with that language. But you do have a language–hopefully it develops as you go along.'[240]

Indeed the very rejection of tradition is the most apparent constraint of free improvisation, effectively limiting the scope of sonic possibilities available. In this sense, free improvisation is far from free, as it has its own set of conventions. Furthermore, the very idea of a 'non-idiom,' can only make sense within a system of idioms, which

therefore paradoxically establishes non-idiomatic improvisation as another idiom. For Prévost 'habit becomes idiom'[241] and thus even in a free improvisation performance there is an idiom; in fact Bailey's kind of improvisation was immediately recognisable. In this sense free improvisation finds itself in the typical modernist problem of unorthodoxies becoming orthodoxies.

The idea that free improvisation, as described by Roger Dean and Hazel Smith as 'non referent work' in which 'no pre-arranged organisation or concept existed specific to that work'[242], thus appears questionable, when considering Bailey's use of the guitar as an instrument. In fact, as Dominic Lash observed, the physical instrument itself was one of the constraints of Bailey's practice[243]. The guitar, however, does not only impose a physical constraint, but also an aesthetic one[244]. Prévost, for instance, goes as far as stating that Bailey's work can be counted as extended technique[245], thus assimilating his practice more clearly to an established tradition.

Toop has traced the search for freedom in improvisation to the *écriture automatique* by Breton. Toop claimed Breton used this as a method for accessing 'the superior reality of certain forms of association heretofore neglected, in the omnipotence of the dream, and in the disinterested play of thought'[246]. This 'superior reality' has also been interpreted as a state of ecstasy, which Rzewski believed was a fundamental element of free improvisation[247]. This could point to a Dionysian quality of free improvisation, a quality that can be also argued to be political more than aesthetic, as will be discussed later. However, often such interpretations tended to re-instate Romantic notions of an aesthetic experience as subjective and impossible to rationalise, similar to religious rapture. Another similar issue was the interpretation of this 'non-idiom' as a universal language, as noted by Rzewski[248]. In Watson's view this search for a universal musical language became a fact, with free improvisation 'transcending established vocabulary

and grammar'[249] and 'divisive semiotic systems of musical genre and language'[250]. Such statements deserve further discussion within the broader debate on the ontologies of music and language, which is beyond the scope of the present analysis, however the most striking issue with Watson's interpretation is the naturalisation of the historical and social contingencies that make such music meaningful. Indeed, as Melvin James Backstrom has noted:

> 'improvising musicians should not imagine themselves free from the structures, contexts, and histories in which they are implicated. Collective improvisation only makes sense, and can certainly only be successful, in terms of shared understandings of the participants in terms of the practice to be realized, given that it is precisely the conscious interactivity of those involved that is valued most significantly by improvising musical communities'[251].

In fact, the collectivity of free improvisation, and the social relationships it involves, was a distinguishing feature that both Prévost and Bailey agreed on as being one of the most important and rewarding aspects of this practice[252]. Part of the reason why this is so is that the unpredictable element in improvisation was generally believed to be provided by other players; Bailey's Company Week events sought in fact to foreground such social aspect of improvisation[253]. Davies saw no distinction between the musical and the personal interaction in the way the Music Improvisation Company functioned as a group. In support of this he recounted an episode in which he had 'teased' Parker during a performance by manipulating his intervention[254]. The collectivism of free improvisation, as the product of a group rather than a single individual, could be said to fulfil, as stated before, the typically modernist antagonism towards self-expression, although this matter has also been contested[255]. The collectivism of free improvisation has however also been fruitfully interpreted as a crucial political dimension of this practice.

1.7.4. The Politics of Improvisation.

The collective practice of free improvisation had noticeable parallels with the social movements and politics of the 1960s. Indeed the idea of freedom in improvisation was as much an aesthetic as an ethical and political concept. The struggle for human rights, the events of May 1968 in Paris, and the counter-cultural ideals were based on the belief that individual activity needed to be superseded by collective, democratic movement in order to achieve lasting change. For many composers, like Cardew, Vinko Globokar, Rzewski, and Wolff free improvisation represented a participatory action to such a movement, and a viable means to reach a more egalitarian society. Prévost, in fact, has stated that there is no distance between a musical enterprise and a social one, and that the priority of (meta-)music is to advance social justice[256]. For Rzweski improvisation functioned 'as a kind of abstract laboratory in which experimental forms of communication can be tried without risk of damage to persons'[257].

In this laboratory the figures of the composer and the conductor were particularly tested and challenged as thought to be obstacles towards the achievement of equality. For instance, Bailey claimed that the conductor's ascendancy (whom he calls the 'composer's proxy') marked the marginalisation of improvisation in Western art music[258]. In Attali's discussion of the politics of the orchestra he spoke of the 'metaphor' of the orchestra, a metaphor for the hierarchical organisation of society in which power relationships shape social and economic exploitation[259]. Canetti in fact described the conductor as holding the power to silence the audience and punish transgressions, thus becoming the 'living embodiment of the law,' which was codified in the score[260].

The hierarchies inscribed in the Western art music orchestra have also been interpreted as a mediation of capitalism's division of labour. For instance, Prévost compared the

conductor as 'the managing director of a factory', whose responsibility is to ensure the maximum productivity of the musicians[261], and he also claims that private property and composition share the same motivations[262]. Thus for Prévost composition and improvisation must be separated on political grounds, as subsuming the latter in the former would neutralise its power to disrupt the status quo[263].

Therefore, as Ramshaw has said for bebop, free improvisation could be considered to be as much positioned in violation of the laws of melodious musicality, as much as the rule of law in Western society[264]. Indeed free improvisation's upsetting of the distinctions between composer, performer and audience, as subversive of authority, had political resonance. Improvised music was for Prévost a revolutionary response to the commodification of music within a capitalistic market, the alienation of musicians, and the exploitation of them by the composer[265]. Free improvisation can thus be said to have the potential to undermine Western art music's founding concepts of originality, individuality and property rights; improvisation can be construed to challenge the hierarchies of the orchestra and the myth of the composer as sole originator. For Attali free improvisation was labour for its own sake, for its own enjoyment, not for producing an object of exchange, thus 'there is a collective questioning of the goal of labour'[266]. Jeremy Gilbert has characterised free improvisation's ability to blur distinctions and destabilise authority as particularly rhizomatic, from Deleuze and Guattari's image of the rhizome, which consisted in a network of connections that is opposed to a hierarchical system. Furthermore, for Gilbert the improvising collective is a perfect example of a 'dividual', another concept of Deleuze and Guattari that indicated a 'collectivity that cannot be reduced to the individuality of its members or to some leviathan meta-subject which encompasses them all in a perfect unity'[267].

Within such political context, the notion of virtuosity also became a charged issue that improvisers took to task. According to Toop, virtuosity meant the acceptance of the 'matrix', a system of scales, harmony, and symbols that constituted the 'machine of sound'[268]. Indeed groups such as the Portsmouth Sinfonia and the Spontaneous Music Ensemble workshop (or the Spontaneous Music Orchestra), and the Scratch Orchestra directly challenged musical competence; for instance the policy of the Portsmouth Sinfonia was that its members be non-musicians or play an instrument that was not familiar to them. John Stevens, one of the convenors of the Spontaneous Music Ensemble workshop, explained that the emphasis on commitment rather than professionalism had the aim to 'get into a collective continuum as a group'[269]. Richard Asplund has described Rzewski's work as 'not based on individual virtuosity, […] but rather on a virtuosity of collective action'[270]. Jim Samson has also discussed how in free improvisation there was an emphasis on spontaneity rather than technical virtuosity[271], further identifying various advantages in the use of unorthodox instrumentation, among which the expansion of the 'available vocabulary of sounds and textural possibilities and help to relax conscious control, diminishing the role of learned responses/processes'[272]. This expansion and relaxation is evident for example in Rowe's laying of the guitar flat on the table and the preparation of its strings. An additional example is Oxley's drum kit, which featured everyday objects such as kitchen utensils and found objects. Parker has stated that in the case of Davies, one could speak of a virtuosity in building an instrument, rather than playing it[273].

However, although viewed with suspicion, the importance of virtuosity within free improvisation has been debated. Free improvisation seemingly opened the doors to those with no instrumental skill, but others have argued that this practice demanded great technical competence. As Prévost has noted 'musical dexterity is perceived and

cherished as an artistic analogue to our increasingly technocratic society. However, technique assists expression and if it serves the processes of musical dialogue, playfulness and investigation then it is obviously of value'[274]. Lash argued that Bailey had developed a practice regime that was at the basis of his improvisations, focussing on three areas: basic technical practice; practice centred on the manipulative demands made by the new material; and 'woodshedding'[275]. On the other hand, Parker spoke of a 'deliberate use of incompetence' as a technique in itself[276]. There thus seems to be a redefinition of technique and virtuosity within free improvisation. Sylvia Hallet, for instance, talked of the 'virtuoso of the mind – having good ears and good ideas, and being able to think and feel music intelligently'[277]. Such a concept was extremely close to Davies's idea of virtuosity, which, as discussed in chapter 5, he expressed as the 'virtuosity of the imagination'[278].

In some respects the use of electronic equipment facilitated the process of redefinition of virtuosity developed by free improvisation. As David Behrman noted, 'no special skills or training are helpful in turning knobs or shining flashlights, so whatever music can emerge from the equipment is available to non-musicians as to musicians. Because there is neither a score nor directions, any sound which results…remains part of the 'piece"[279]. However, recording technology has also challenged the emphasis on music's ephemerality made evident in free improvisation. Recording has in fact countered the lack of what Bailey called a 'residual document' of an improvisation[280]. Thus the refusal of free improvisation to produce a finished object to be fetishized, and to resist the commodification of music is undermined by the availability of recordings of improvisations. Recording could be argued to 'fix' what was meant to be a music in the process of becoming, reifying what was in its intention necessarily transient, thus changing its very nature. However, for Cardew recordings of improvisations are

'essentially empty', incapable of recreating a music that is so bound to the specific time and place in which it occurs[281]. Although Bailey claimed that recording technology liberated the improviser from the burden of having to produce a score[282], he also pointed out that transcriptions (in this case a phonographic transcription) of an improvisation was 'impossible'[283]. Both Bailey and Prévost argued that a recording of an improvisation changed the nature of the act into something more akin to a composition[284]. However, recordings are not necessarily static, and could offer varied responses on multiple listenings. Furthermore, unlike Glenn Gould's predictions that recording technology would replace the public concert[285], recordings and live improvisation can coexist because, as noted by Bailey, they offer a 'different listening experience', with a live performance seemingly being preferable[286]. Recordings are also often necessary documents that help maintain economically and ideologically a small community such as that of free improvisation; Bailey, for instance, established his own recording label, Incus, in 1970. In the case of Davies, recordings of his pieces have been crucial to establish a scholarship on his work, which would have otherwise been greatly reduced in its scope.

2. Hugh Davies's early works and the electronic music studio.

Hugh Seymour Davies was a composer, performer, inventor of experimental music instruments and a musicologist. He was born in Exmouth, Devon, Great Britain. Davies grew up in West Byfleet, Surrey with his father Harold Davies (born in 1915 in Eltham, Kent and died in 1992), his mother Joan Davies (née Seymour, born in 1915 in Littleham, Devon and died in 1995), and one sister, Susan Davies (born in 1945 in Exmouth, Devon). Davies married Pamela Davies (née Bailey and born in 1956), a primary school music teacher with whom he had a daughter, Rebecca Davies (born in 1986). He died in London on 1 January 2005 at the age of 61. After his death a number of recordings that belonged to Davies along with several other documents, such as scores, writings, and letters were donated to the British Library in London and now form the Hugh Davies Collection and Archive. The recordings consist of around 300 tapes and cassettes. About 30% of the tracks contained on these tapes are Davies's own works. I completed the cataloguing of 282 recordings in June 2011, however since then several other recordings have been recovered and still await cataloguing. The British Library has recently digitised the catalogued recordings, and they are now available from every audio terminal in the reading rooms. Some of Davies's recordings are also to be featured on the British Library Sounds website. The paper archive is at present kept in several boxes and the full extent of its content is yet to be ascertained, although attempts at grouping items under broad headings have been made by Dr. Nicola Candlish. Some of Davies's instruments, scores, and pieces of equipment were also donated to the Science Museum in London. The resources at the British Library and the Science Museum represent a fundamental historical record of Davies's work. Furthermore, since Davies was an active researcher, some of his writings can still be

regarded as the most expert knowledge available on a range of topics, such as sound sculpture, new musical instruments, and early electronic music. In this chapter I intend to give a brief overview of Davies's musical activities and then discuss his early compositions, as well as his work in compiling RIME and establishing two electronic music studios in the UK. In the following chapters I will then deal more specifically with his mature works.

2.1. Profile.

2.1.1. Beginnings.

Davies's engagement with music began early. He received instrumental lessons in piano and clarinet from his early teens, studied singing, and was an autodidact in composition. He attended Westminster School and sang in the Abbey Choir at Westminster Abbey. Subsequently Davies studied for a bachelor in music at Worcester College, Oxford University from 1961 to 1964 (see appendix 1, figures 39-43). While at University he attended classes in music theory, studying counterpoint and harmony with Edmund Rubbra (1901-1986), and music history with Frank Llewellyn Harrison (1905-1987). Davies wrote his dissertation on electronic music in 1963, which was entered for the Lowell Osgood Prize (see appendix 1, figures 53-56). Shortly after completing his degree at Oxford, Davies travelled to Cologne in Germany to work for Karlheinz Stockhausen as his personal assistant. The two had previously met regarding a book on Stockhausen's music that Davies was working on, which he never published (manuscripts of the book drafts are now kept at the British Library). After this initial encounter Stockhausen hired Davies, who was employed by the German composer between 1964 and 1966. During this time Davies participated in a group for performing

live electronic music directed by Stockhausen and thus took part in the first performances of *Mikrophonie I*. Davies also figured in both of the released recordings of the piece. In the 1965 recording Aloys Kontarsky (b. 1931) and Alfred Ailings[1] played the tam tam, while Johannes Fritsch (1941-2010) and Harald Bojé (1934-2009) operated the microphones. Davies and Stockhausen controlled the filters, while the volume was regulated by Stockhausen and Jaap Spek[2]. After the termination of this employment, Davies maintained a working relationship with Stockhausen lasting several years. In fact he continued to correct scores for Stockhausen and participated in performances of his works in the UK. For instance on 1 August 1985, Davies participated in the series of concerts 'Stockhausen: Music and Machines', which was given by the BBC Symphony Orchestra conducted by Peter Eötvös (b. 1944) at the Barbican Centre in London. On this occasion Davies operated one of the sine wave generators for the performance of *Mixtur*, while Stockhausen himself controlled the overall sound balance. After leaving Cologne in 1966 Davies lived in Paris and New York, working on compiling of the *Répertoire international des musiques électroacoustiques* or *International Electronic Music Catalog* (henceforth RIME), published by the Massachusetts Institute of Technology Press in 1968. On his return to England in 1967, Davies founded an electronic music studio at Goldsmiths College, which he directed until 1986, and then acted as a consultant researcher there until 1991.

2.1.2. New musical instruments and exhibitions.

In 1967 Davies started building new musical instruments, which later became a central activity in his work. He invented about 65 concert instruments and also explored further the implications of making instruments by producing sound sculptures and sound installations. In total it is estimated that Davies realised 130 new instruments,

sound sculptures, and site-specific installations. Davies exhibited his work internationally, presenting in group or solo shows in Britain, Belgium, France, Germany, and the US. For instance in 1985 Davies participated in *A Noise in Your Eye*, an exhibition that toured to Bristol, Sheffield, Newcastle, Huddersfield, Manchester and London. Sound installations became an activity on which Davies increasingly focused later in his career. For instance he contributed the installation *Ring dem Bells* (1991) to the *Resonancias* exhibition at Museo Municipal de Málaga in Spain, which ran from 11 September to 15 October 2000. This work consisted in two modified telephone keyboards, which were positioned on a plinth, and which triggered a series of doorbells of two notes ('ding-dong'), buzzers, and four bells. The phones were turned into a kind of musical keyboard, each button operated a differently tuned door chime or a pulsing buzzer mounted on the wall. Davies's two last major works were a gallery and a site-specific installation. In May 2002 the Sirius Arts Centre in Cobh (County Cork) exhibited Davies's *Soft Winds Do Blow*, which consisted of a gallery room containing invented instruments and sound objects played by any small number of rotating electric fans, as well as by visitors operating a foot pump. This exhibition also featured a large outdoor wind harp with strings struck by weighted flags. In September 2003 Davies realised the site-specific installation *Postojnski zvoncert* (Postojnian Bell-Concert) in a cave in Slovenia, as part of the International Society for Contemporary Music (ISCM) World Music Days. This work consisted of a network of bells and bell-shaped or bell-sounding objects (some of which were home-made) that were triggered by visitors (see chapter 6). Davies's work also featured in two posthumous exhibitions. The Science Museum included some of Davies's equipment, such as a toolbox he used for live performances, as part of the *Oramics to Electronica* exhibition, which opened on 29 July 2011 and is still running at the time of writing. In September 2012 I curated an exhibition that featured Davies's instruments, sound recordings, letters, and concert posters selected from his

archive and estate as part of the *SHO-ZYG* collective sound art exhibition at St. James Hatcham, Goldsmiths College, London (see appendix 2).

2.1.3. Work as a performer.

Davies was an active performer, it is estimated that he gave around 200 solo concerts and lecture-recitals on his instruments. Davies's performances and broadcasts were given in more than 25 countries including Great Britain, Argentina, Belgium, France, Germany, Holland, Hungary, Italy, Poland, Switzerland, and the US. He recorded for various labels such as CBS, DGG, Polydor, Electra, Toshiba, Obscure, ECM, Incus, OU, Agaric, FMP, GROB and cassette labels such as Audio Arts, Blank Tapes, Quartz/Mirliton and Editions Jean-Michel Place. His invented instruments were featured on over 50 published recordings and 30 of his compositions have been recorded commercially, some in more than one version. Davies performed with several other musicians of different musical backgrounds such as Richard Orton (1940-2013), David Toop (b. 1949), Evan Parker (b. 1944), Max Eastley (b. 1944), and Paul Burwell (1949-2007). Davies was also a member of several ensembles. For instance, from 1967 to 1969 he was a member of the Arts Laboratory Ensemble; between 1968 and 1975 he was part of the new music ensemble Gentle Fire. He was also part of the Music Improvisation Company from 1969 to 1972 with Derek Bailey (1930-2005) and of Naked Software from 1971 to 1973 with Annea Lockwood (b.1939).

2.1.4. Work as a researcher.

Davies was also an active researcher; his main areas of interest were early electronic music up until 1970 and twentieth century instruments. He published the first complete

discography of electronic music in 1964 for the British Institute of Recorded Sound, and he was a major contributor to The New Grove Dictionary of Musical Instruments contributing 300 entries to the 1984 edition, 65 of which still remain in the current edition. In 2001 Davies published the book *Sounds Heard*, a collection of his scores, environmental projects, and texts that he wrote throughout his career. From 1999 until his death, Davies was able to extend his interests in musicology by taking up a role as a part-time researcher in Sonic Arts at the Lansdown Centre for Electronic Arts (LCEA) at Middlesex University, London. Davies's texts have been published in the UK, Austria, Holland, Italy and the US, especially in exhibition catalogues, such as those for a retrospective of the history of electronic music at the Venice Biennale in 1986, and for the electronic instruments at the Gemeentenmuseum in the Hague (where he was a consultant on twentieth century musical instruments) in 1988. He also published *Echo: the Images of Sound* in conjunction with the Fluxus sound and visual artist, Paul Panhuysen (1934-), a publication that accompanied the homonymous festival, which took place in Eindhoven, in the Netherlands, from 1 May until 14 June 1987.

2.1.5. Memberships.

Davies took part in a number of initiatives for the support and promotion of electronic experimental music. For instance, between 1967 and 1968 Davies was the European Editor of the Electronic Music Review. From 1968 to 1971 he was part of the Macnaghten Concerts Committee and in 1969 of the British Society for Electronic Music Committee. Between 1969 and 1970 he was part of the New Activities Committee for the Arts Council and from 1974 to 1977 of the Editorial Committee for Musics Magazine. Davies was among the founding members of a number of organisations, such as for instance the London Musicians' Collective (LCM) in 1976, of

the Electro-Acoustic Music Association of Great Britain (EMAS) in 1979, and of The International Confederation of Electroacoustic Music (ICEM) founded in Bourges in 1981.

2.1.6. The Arts Laboratory and The Artist Placement Group.

Among Davies's associations, his relationship with the Arts Laboratory and the Artist Placement Group (APG) deserves particular mention. Davies was artistic director at the Arts Laboratory, a mixed media workshop, presenting experimental film, theatre, painting, and music founded in 1967 by Jim Haynes (b. 1933) and situated in Drury Lane, Covent Garden, London. Under Davies's supervision the Arts Laboratory championed new works by both American and English composers. In the programme for a series of concerts for their Festival of New Music (believed to have taken place in 1968) *Vexations* (c.1893) by Erik Satie was played by Richard Toop (b. 1945), with the performance lasting 24 hours. For the American programme various pieces were given: *The Wolfman* (1964) by Robert Ashley, *Folio* (1952) by Earle Brown, *Two Pianos* (1957) and *Durations I* (1960) by Morton Feldman, *For 1, 2, and 3 People* (1964) and *Duo for Pianists II* (1958) by Christian Wolff, and an unspecified piece by La Monte Young. For the English new music programme the works performed included *Piano Piece I* (1966) by David Bedford (1937-2011), *Memories of You* (1964) by Cornelius Cardew, and the premières of Anna Lockwood's *Shone*, Richard Orton's *Cycle* and Hugh Davies's *Quintet*. A special place in the programme was reserved to the music of John Cage, whose *Concert for Piano and Orchestra* (1958) and the first performance of *Electronic Music for Piano* (1964) with *Variations IV* (1963) were given on a separate day (Sunday). The performers were Davies himself, Richard Orton, Anna Lockwood, and Toop among others. On other occasions the Arts Laboratory exhibited John Lennon (1940-1980) and Yoko Ono's (b. 1933) first joint work *Build Around* in 1968; in the same year David Bowie (b.

1947) performed there, and in 1969 he established a similar venture, the Beckenham Arts Lab, with the journalist Mary Finnegan (dates not known).

Davies first had contact with the APG in the autumn of 1975 and in 1978 he became one of its directors[3]. Barbara Steveni[4] initiated the APG with other fellow artists such as John Latham (1921-2006) at St. Martin's School of Art in 1965. The purpose of the APG was to place artists in public institutions and companies seeking a transformative experience for both sides. Indeed the placement was intended to introduce a different perspective in the companies and institutions that participated in this scheme, thus catalyzing a change in their values. It also sought to overcome the boundaries of the gallery within which the practice of art was confined and thus shift the focus from object production to cultural intervention.

To do so the APG adopted subversive strategies: Latham, for instance, developed the concept of the 'unit of attention', which sought to replace monetary value and instead measure the value of an idea – characterised by parameters such as the number of people affected by it and the permanence of its influence[5]. However, it is debatable whether this so-called 'total economics' measured human development, subverted economic accounting systems, or represented an assimilation to them. Indeed Stuart Brisley, who held a placement at Hille ICI in 1970, sharply criticised the operation of the APG, accusing the group of acting in the same manner of the organisations it sought to change, and accused it of exploiting people[6].

On the other hand, and crucially, the placement was not intended to result in an artwork, thus frustrating the production ethos of industries. As Walker claimed, for APG context was 'half of the work'[7]. To stress the departure from accepted models of art production, the identity of the artist was reconceptualised with the use of the term 'incidental person'. An APG statement claimed:

'In an APG placement the Incidental Person involved begins with an open brief. The work which emerges from the placement is thus wholly determined by the circumstances found there and will not necessarily be a work of art in the traditionally-expected sense, (placements have yielded variously: fields, video records, reports and analysis, community action schemes wasteland and urban regeneration schemes, diary records, sculptures, reminiscence aids for the elderly, historical research on new communities, formulations in less well understood areas)'[8].

The ethics of the APG can be compared to those of the Situationist International, which held the belief that art was an alienated activity that needed to be replaced with revolutionary action. However, as Bolt Rasmussen has noted, the APG was not as radical at the Situationist International. The former never left art altogether, but rather sought a new social function for it, and in fact he claimed that in many respects the APG ended up confirming the traditional, Romantic role of the artist[9]. Nonetheless, Walker has speculated that it was because of the non-traditional, open-ended, and experimental attitude of the APG that the Arts Council discontinued its support of the group, which received funding only until 1975[10].

Despite the economic difficulties and ideological struggles, the APG negotiated several placements within disparate organisations, such as those of Garth Evans at the British Steel Corporation (1969-70), Lois Price at Milton Keyes Development Corporation (1970), and Andre Dipper at Esso Petroleum (1971). Later the APG extended the scope of its work to government departments with the placement of Roger Coward at the Department of Environment (1975), Latham at The Scottish Office (1975/76), and Ian Breakwell and Hugh Davies at the Department of Health (1976). The latter placement was in the Personal Services and Mental Health Group of the Architects Divisions, concerned with the future planning of psychiatric hospitals. From the records available this placement does not seem to have gone beyond the 'feasibility study' stage, which always preceded the actual placement; in this case the study lasted four weeks. Davies

said that such placements were an opportunity for an artist to reach a wider audience, but also to empower people to have more confidence in their own artistic capabilities[11], concerns that also fundamentally informed his musical work.

2.2. Early works.

2.2.1. *2 Pieces for Flute and Piano*.

Davies was a boarder at the Westminster School in London, one of the major private schools in the UK. The school has a long history having been opened by Benedictine monks of Westminster Abbey in 1179. It has also a long musical tradition, among its most notable pupils were Henry Purcell (1659-1695) and more recently George Benjamin (1960-); Tristram Cary was also a pupil at the school. Pupils at the school usually had an orchestral rehearsal on one day and choir on another. Furthermore every morning there was a 20 minutes service at Westminster Abbey where the school choir sang and for which it rehearsed at least three mornings a week at 8.30 am. Pupils also gave a concert every semester, and informal concerts every month or so. As well as the usual subjects to O-level, such as English, French, Latin, and Maths, Davies specialised in Classics (Latin and Greek).

Among the earliest known works by Davies while a pupil at Westminster School are the *5 Bagatelles for Piano* (1959), which was entered in a music competition in the same year and was awarded third place. *Male est (Catullus)*, a piece for tenor voice and piano accompaniment was completed in December 1959. The *2 Pieces for Flute and Piano* completed in April and July 1961 and dedicated to Martin Gellhorn (1945-) were written in the twelve-note technique and point to a nascent interest in creating novel sonorities and processes. Davies's interest in serialism began with hearing the Violin Concerto

(1935) by Alban Berg (1885-1935), a piece that characteristically combined the twelve tone technique and more tonal passages. Martin Gellhorn, a friend and fellow pupil of Davies at Westminster School said:

'We saw the change in the musical language from tonality to serialism at the beginning of the 20th century as natural and as radical as the change from polyphony to harmony at the beginning of the 17th century. Serialism was (I think for Hugh) simply the current musical dialect'[12].

The first piece of the *2 Pieces for Flute and Piano* was written according to strict serial rules, with an original note-row and its inversion, retrograde, and retrograde inversion. The second piece combined this with passages of indeterminacy, also employing serialised time signatures. The players were free to choose the notes and dynamics that were written above the stave, and notated only to show the rhythm. During the passage in bar 16 – between vertical dotted lines – the rhythm, tempo and dynamics of the written notes were left entirely to the performers' discretion, and the pianist had the freedom to combine any adjacent notes to form a chord, while instructed to play the notes on each stave independently of those on the other. The combination of twelve-tone technique and indeterminacy seems to suggest that Davies saw no antithetical aesthetics in these methodologies, but rather a continuity of purpose. The score also presented instructions for the flautist to stand beside the piano with the instrument pointing towards the pianist, and for the piano lid to be opened between the pieces. The *2 Pieces for Flute and Piano* were first performed with Davies at the piano and Gellhorn on flute on 7 July 1961 at one of the informal concerts that were organised by pupils of Westminster School for themselves. The programme also included works by Johannes Brahms, Francis Poulenc (1899-1963), George Frideric Handel (1685-1759), Joseph Haydn, and Anton Webern. On that occasion, Gellhorn and Davies also played *Joueurs de Flûte* (1924) by Albert Roussel (1869-1937), a piece that employed the Dorian mode and the Raga-Shri, a North-Indian musical scale. A second performance of the *2 Pieces*

was given at the Balliol College Music Society at Oxford University on 11 February 1962 by Davies at the piano and Pippa Burrow[13] on the flute. Davies planned to extend his use of serialism to other musical aspects; he made sketches to serialise 'note names, pitch of each note, attack, rhythm, bars (time signatures), tempo, number of notes per chord, instrumentation, and dynamics'[14]. However it appears Davies never pursued this intention, later rejecting this technique altogether. None of the pieces Davies composed while at Westminster School have been published; the manuscript scores are kept at the British Library.

2.2.2. The Oxford University works for traditional ensemble.

Among the compositions written during Davies's undergraduate studies at Oxford are the *3 Piano Pieces* completed between April and May 1962, the *Variations for Piano* of 1962, and the *Three Carols on Latin Text* for female voice ('O Magnum Mysterium', 'Dormi Jesu', 'Hodie Christus Natus Est') completed in 1963. The major piece for traditional instruments composed during his undergraduate studies at Oxford was *Metamorphosis* (1962) for nine instruments and twelve players (see appendix 1, figures 48-51). This piece is believed to have been premièred at the Oxford University Contemporary Music Club in March 1962, with Davies conducting the piece. The score featured a precise layout of the instruments. The flute and oboe stood to the right and left side of the conductor; the four double basses stood behind the flute, while the piano behind the oboe. The viola and the clarinet were to the right of the organ and the cello and trombone to the left; the horn in F was to stand inside the entrance door (see appendix 1, figure 52). Such interest in the spatialisation of sound was to be a concern in Davies's later works. Indeed, his amplified instruments often had a quadraphonic output.

While at Oxford Davies also composed for the theatre. For instance, he composed the music for a staging of *Twelfth Night* directed by Michael Rudman[15] and designed by Douglas Heap[16], which ran for two weeks at the Oxford Playhouse in February 1963 (see appendix 1, figure 44). Davies's involvement with theatre continued with commissions to compose the music for *The Good Woman of Setzuan*[17] (1962/64), an Epic Theatre play by Bertolt Brecht, which showed at the Oxford Theatre. Various composers had previously realised songs for this play, such as Huldreich Georg Früh (1903-1945), and Paul Dessau (1894-1979). Davies's music consisted of four movements ('Overture', 'Night', 'Shui Ta', 'Shen Te') and a cycle of songs ('Song of the Smoke', 'Song of Defenselessness', 'Song of Saint Nevercome's Day', 'Song of the Eighth Elephant', and 'Valedictory Hymn')[18].

2.2.3. The rejection of serialism.

At the end of his studies at Oxford Davies had reached an important stage in the development of his aesthetic philosophy. In 'Reflections of a composer', written in May 1964, Davies lamented the lack of audible unity in twelve-tone music, revealing a concern for perception as a primary element in the evaluation of music. In the text Davies claimed that, although having initially adopted this method in search of a radical approach to music making, he had subsequently realised that it did not grant him the possibility to pursue a new music, but that it was rather as traditional an approach as writing tonal music. This however was in contradiction with the intentions behind the development of integral serialism by Pierre Boulez, which was motivated by the wish to do without traditional form. Davies spoke of a reaction against the 'objectivity' of twelve-tone music, a reaction that was articulated in seeking an extreme subjectivity in his work arguing that 'a work must stand or fall by how the listener hears it', and

continuing 'what a composer must care about is the projection of his own musical personality'[19]. Such statements continued the arguments against serialism rehearsed by Pierre Schaeffer and Daphne Oram (see chapters 1 and 2). The former considered serialism unnecessarily restrictive, while the latter accused serialism of disregarding the audience's capabilities to perceive its structural relations. To overcome the perceived boundaries of serialism Davies turned to electronic technology. Electronic technology had however also been used to elaborate what was possible to do in serialism, allowing composers to exert further control over the results. Stockhausen had, in fact, used the electronic medium in the first place because it allowed greater serial control over the parameters of sound, as for example in his *Studie II* (1954). Nonetheless, the possibility to extend one's control over the material through electronic technology did not necessarily lead to serialism, as Oram's work with the Oramics demonstrated. In any case the use Davies made of electronic technology, which involved mainly the use of amplification, did open up a way outside the orchestral soundworld (see chapter 5).

2.3. Early interest in electronic music.

2.3.1. The Oxford Contemporary Music Club.

If serialism seemed a traditional compositional form to Davies, the work he did as part of his degree at Oxford, such as writing anthems, must have felt even more removed from his quest for a radical music making practice. Nonetheless Davies found ways to pursue his interests by participating in extra-curricular activities. For instance, Davies was part of the committee for the Oxford Contemporary Music Club (henceforth OCMC). This involvement offered him an important outlet for his interest in experimental and electronic music, as well as a chance to network with people who

shared an interest in the field, whether they were directly involved in music or not. The club gave concerts for its members at the Holywell Music Room, and the climate among the participants was of mutual exchange of ideas. At the club events composers performed their fellow students' pieces – creating an atmosphere of camaraderie that distinguished other ventures in which Davies was later involved, such as the London Musicians Collective. For instance, in a concert given by the OCMC on Thursday 7 June 1962, Tim Souster, who was to later become a member of the ensemble Intermodulation (see chapter 4), played the piano in the *Sonatina for Flute and Piano* by Nicholas Maw (1935-2009), while Davies followed at the clarinet in *Salve Regina* by John Caldwell (1938-). Dudley Treharne played Davies's *3 Pieces for Piano*, and after the interval Alec Hill[20] – the president of the club – played his *Four Structures in Time*[21]. This piece was followed by *Due liriche di Anacreonte* by Luigi Dallapiccola (1904-1975), which was conducted by Gordon Crosse (1937-) and featured the soprano Christiane Hunter[22], Davies and Hill on clarinet, Treharne on piano, and Souster on viola. Souster concluded the evening at the piano with 'Tango, Hymne', from the *Serenade in A* (1925) and *Piano Rag Music* (1919) by Igor Stravinsky (1882-1971). At this concert, Davies and Gellhorn also presented their *Essay for Magnetic Tape* (1962), a piece that had been composed at Oram's Tower Folly studio[23]. This piece was performed twice during the evening according to the programme.

2.3.2. The relationship with Oram.

Even before beginning his undergraduate studies, Davies had already developed a keen interest in electronic music. As early as the spring-summer of 1961 he got in touch with Daphne Oram requesting information for a list of electronic music pieces that he was compiling. According to Davies, Oram was the first full-time electronic music

composer in Britain[24]. In 1958 Oram saw the establishment of permanent facilities for the production of electronic music at the BBC. The BBC Radiophonic Workshop, however, was not an electronic music studio in the manner of the ones set up in Paris, Cologne, or Milan, but rather a studio for electronic sound treatment for radio drama. Oram left the BBC in January 1959 and concentrated on establishing the personal studio she had set up in Tower Folly, a converted oast-house in Fairseat, Kent. At Tower Folly she realised a number of autonomous electronic music works. She composed *Four Aspects* (1960), which was performed at the Queen Elizabeth Hall in 1968. Another work, *Pulse Persephone* (1965), was played in occasion of The Treasure of the Commonwealth exhibition at the Royal Academy of Arts. *Episode Metallic* (1965) was used as part of an Andrew Bobrowski[25] kinetic sculpture installation. In addition to these 'serious' works, Oram also composed several more light-hearted pieces, one of which had 'raised the interest of Tin Pan Alley for a release'[26]. Oram also pursued commissions for commercial work, such as composing jingles for advertisements and incidental music, in order to sustain the costs of running her own studio. For instance, she composed the soundtrack for *The Innocents* (1961), a British horror film directed by Jack Clayton (1921-1995) from an adaptation of the novella *The Turn of the Screw* by Henry James (1843-1916). She also contributed the music for the theatre play by Fred (1915-2001) and Geoffrey (b. 1942) Hoyle, *Rockets in Ursa Major,* which ran at the Mermaid Theatre in 1962.

Furthermore, Oram created her own musical artifact, the Oramics machine, an analogue and digital system for the synthesis of sound, which was operational by 1966. The Oramics was a music machine with which Oram sought to further explore the possibilities that technology offered in producing sound. The idea for the Oramics had originated during a BBC training session in 1947, where Oram assisted at a

demonstration by Professor A.M. Low[27] of an oscilloscope, which allowed for the graphic tracing of an acoustic phenomenon. This inspired her to seek to reverse the process and thus generate sound starting with a graphic image. Thus the core of the machine was drawn sound. Oram composed only a handful of pieces using the Oramics machine, such as *Broceliande* (1970) and *Sardonica* (1972), the latter composed with Ivor Walsworth. These recordings are available at the Oram Collection at Goldsmiths College, University of London, and have also been released in a commercial recording in 2007 titled *Oramics* by Paradigm Discs.

Oram was also a theorist of electronic sound. The electromechanical process embedded in the Oramics was informed by her own theoretical system that linked electronics with metaphysical beliefs. Oram, in fact, developed the theory of the *ELEC* and *CELE*, which represented two extremes in an intangible-tangible continuum that to Oram symbolised the life cycle[28]. Oram described the ELEC and CELE as two forces she believed were at play in art as in life and whose dialectical relationship shaped musical composition, performance, and listening. For Oram, technology facilitated the connection and balance of these two forces[29]. She thus assessed technology positively. In fact, scientific thought had a profound influence on her philosophy of music. Oram believed that electronic technology should have brought about the conquering of the universe of all sounds[30], a Promethean attitude that was widespread in the cultural milieu of modernism. Indeed Oram's optimism was shared by a number of composers about the advancement and amelioration that technological progress engendered, such as for instance Edgar Varèse.

Oram also explicitly acknowledged her role as a woman composer working with technology, framing the discourse of science and music in the social realm. Indeed she contributed a gendered reading of the home computer and the tape recorder; referring

to the home computer she stated that it was 'exciting for women to be present at its birth pangs, ready to help it evolve to maturity in the world of arts. To evolve as a true and practical instrument for conveying women's inner thoughts just as the novel did nearly two centuries ago'[31]. She also wrote about composing using the *musique concrète* techniques in the form of recipes[32]. Oram, thus, disrupted the understanding of technology in neutral (and thus patriarchal) terms and thus reclaimed their significance for women.



Figure 1. Daphne Oram drawing timbres on the Oramics, (photograph: DOA, ORAM 7/9/018).

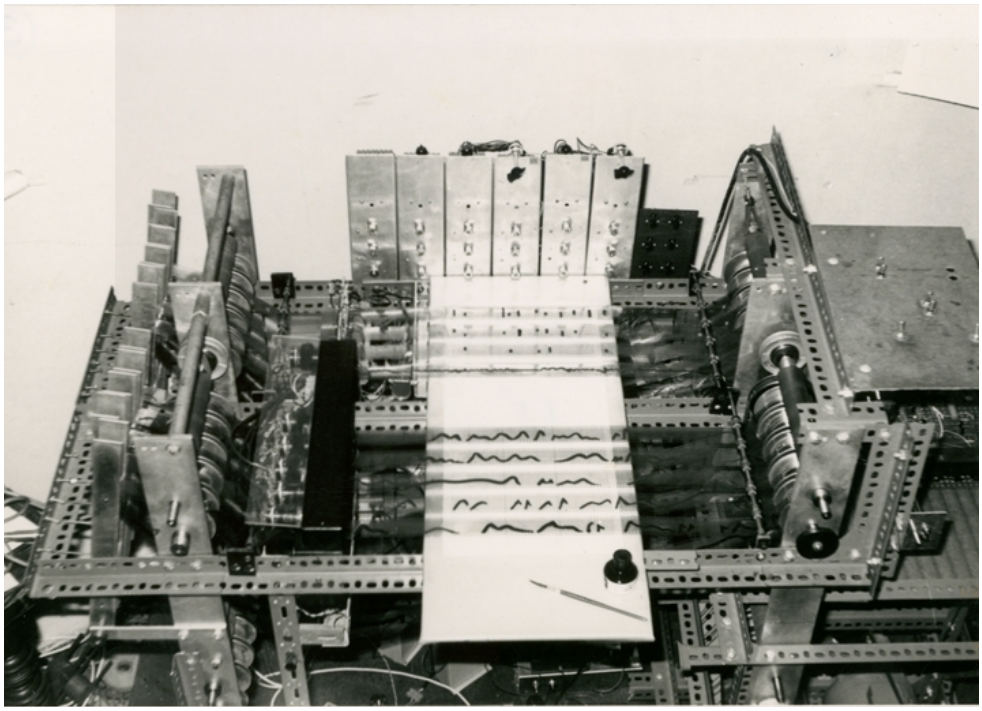


Figure 2. The Oramics machine, (photograph: DOA, ORAM 7/9/044).

The first available recorded communication with Oram occurred on 4 October 1961 (see appendix 1, figures 45-47). This is a response to a letter by Davies, where he seems to have suggested meeting. Oram, who had worked with the father of Martin Gellhorn – the pianist and conductor Peter Gellhorn (1912-2004) – at the BBC, invited Davies and Gellhorn to visit her studio. It seems that originally Davies had suggested attending a weekend course at Tower Folly, but Oram explicitly preferred a more informal meeting writing: 'you'll definitely be guests not pupils this time!'[33]. Thus, Davies and Gellhorn visited Oram's studio for a weekend on 6-7 January 1962 and recorded material, which resulted in the study *Essay for Magnetic Tape*, lasting 3 minutes and 34 seconds. Later, in 1963, Davies also recorded parts of another piece at Tower Folly, a piece for the theatre play *The Scarecrow*. This piece lasted 7 minutes and 49 seconds, and was completed in Edinburgh, where the Oxford Theatre Group presented the work, which was deemed a success by Davies[34]. Part of the work for *The Scarecrow* music had

also been conducted at an electronic music studio that Davies had set up at Oxford University in 1963, which will be discussed later.

It is significant that Oram invited Davies as a guest rather than as a student, as such an attitude appears to indicate that Davies already possessed a very good knowledge of the medium of electronic music. However, this may not be so surprising since the knowledge that composers in the UK would have had of electronic music and electronic technology at the time, could have hardly been extensive as information on the subject was hard to come by. Thus, it would have not taken much for Davies to acquire the same level of knowledge as someone like Oram – despite her many accomplishments by the time of their first meeting. Oram had been largely an autodidact in electronic music techniques, learning about electronic technology as she went along, through trial and error. Furthermore, the help Oram had from the engineers she hired is not to be underestimated. Even when Davies started running classes at the Electronic Music Studio at Goldsmiths College in 1968, he believed his knowledge to be little more advanced than his students, noting how often he was barely ahead of them but for a couple of weeks[35].

2.3.3. The British Institute of Recorded Sound discography.

Nonetheless Davies may have been rather modest when assessing his own knowledge of electronic music as he had significantly contributed to the field very early on, for instance in compiling a discography of electronic music for the British Institute of Recorded Sound (henceforth BIRS). The BIRS is what is now called The British Library Sound and Image division, of which the Hugh Davies Collection is part. Oram was instrumental in this project, suggesting Davies for the job. A month after her

notification of this project to Davies – and after Davies had formally accepted the job – a first meeting with Peter Sand[36] was arranged on 10 March 1962. In the following months Davies kept Oram informed on his progress in compiling the discography, and she continued to give feedback on his work, despite being busy, especially towards the end of 1962, with the work she was doing on the Oramics. In a letter dated 16 July 1962 Oram, with regards to his ability to gather information, called Davies 'a brilliant detective'[37]. At that point, Davies had compiled the discography in different lists. He had separated composers of electronic music and composers of *musique concrète*. This division was based on the different sound sources that were employed by the two camps. Such a distinction respected the two poles towards which experimental electronic music gravitated since the 1950s: *musique concrète* in Paris and *elektronische Musik* in Cologne. Davies had elsewhere made such a distinction according to whether the sounds were synthesized – as in the case of 'pure' electronic music – or recorded with a microphone from the real world and then processed – as in the case of concrete music[38]. Nonetheless, this division was problematic as neither Stockhausen nor Schaeffer (the inventors of these genres) employed either method exclusively. For Schaeffer, the studio techniques pertaining to the electronic music studio, as applied to acoustic sound sources, were a way to reach the *en soi* or 'in-itselfness' of the sound[39]. However, Herbert Eimert, a prominent exponent of *elektronische Musik*, also seemed to echo these intentions by stating that the possibilities offered by electronic music were to reveal 'the potentialities of sound itself'[40]. Davies wrote that 'electronic' and 'concrete' were terms more appropriately used to describe the methods rather than the resulting sound materials[41]. '*Musique concrète*', Davies said, 'still means music based on "sounds recorded through a microphone", and when the resulting music derived from it is similar to electronically produced sounds, the distinction is meaningless'[42]. Davies also clarified that for Schaeffer the term had nothing to do with the procedure employed in

the first place, as that was solely the composer's concern and did not need to interest the audience[43] – another assertion of the primacy of perception in the experience of music. Significantly, when Davies came to translate '*musiques électroacoustiques*' in the French title of RIME catalogue he chose 'electronic music' as a comprehensive label for different methodologies. Nonetheless, a term like 'electronic' cannot be used unproblematically, since the later development of synthesizers – and especially those that featured a keyboard – seemed to enforce constraints on the potentialities of sounds that such technology had originally been expected to overcome. Such ambivalence in the use of electronic technology in music would be fundamental in the development of Davies's aesthetic philosophy in inventing amplified instrument (see chapter 5).

The BIRS discography was terminated by 19 May 1964. At that point, Oram proposed to Davies to try for a job at the BBC, but in the same year Davies accepted the position of assistant with Stockhausen in Cologne. After she gave a very successful two-lectures course titled 'Electronic music from concrète to computer' at Senate House, University of London, on 7-8 May 1968, crediting Davies for his help[44], Oram wrote: 'let us hope that we can collaborate again in the near future–certainly after years of pioneering work things seem to be opening up for us'[45].

2.3.4. The Oxford University Studio for Electronic Music.

The professional relationship with Oram was to prove nonetheless fundamental in the development of Davies's own work. Oram's personal studio at Tower Folly was not only the first studio that Davies has been known to work in, but it might also have motivated him to set up a studio. Although temporary and a short-lived venture, the Oxford University Studio for Electronic Music (henceforth OUSEM[46]) can be

considered the first electronic music studio at a university in Britain, preceding the establishment of the electronic music studio at Goldsmiths college by four years, which Davies also oversaw. Oram proved a decisive help in this venture, giving advice on the essential pieces of equipment needed for the studio, suggesting that Davies initially obtain three tape recorders and a mixing unit. Oram then recommended the acquisition of a signal generator of sine and square wave, covering the audio rather than the radio range as an inexpensive option, saying it would have cost less than £20 (about £350 today)[47]. Davies had sent Oram a list of items he was planning to collect and even mentioned a possible visit by Oram to Oxford to help him out. During February 1963, when the establishment of the studio was forthcoming, Oram ordered tapes for Davies. She empathised with the difficulties Davies had to endure in pursuing such an enterprise. In a letter dated 22 September 1962 Oram wrote:

'You are rather in the position that I was in the BBC some seven years ago. There is lots of equipment around you, but how to get it all together and have the time to rig it all up and use it before someone wants one of the vital pieces back again is the real problem. I solved this by collecting the bits after 11pm and returning them at 4 am but that's a bit wearing on the constitution! Also sound proofing becomes an issue'[48].

OUSEM was established at Clarendon Laboratory in the Department of Physics at Oxford University with the help of Alec Hill, the president of the OCMC, who was a physicist as well as a composer. In a local newspaper interview given at the opening of the studio in February 1963, Davies demonstrated an awareness of the significance of such a venture saying:

'This is an important aspect of music today and composers so far have had no studios to work in this country. The formation of the studio will cost much effort and I hope that musicians here will show sufficient interest in it to lead to the establishment of a proper studio under official auspices, as is the case in several other countries"[49].

Several people were indeed interested in Davies's studio, *in primis* Edmund Rubbra, one of Davies's teachers, who attended a demonstration of its capabilities. Other composers who were interested in its compositional potential were Gordon Crosse (1937-) and Bill

Hopkins (1943-1981). The studio was set up with temporary material assembled according to the needs of the composition, and was mainly used to realise electronic sounds for theatre plays, rather than for autonomous compositions – much as the RW had done before.

The equipment at OUSEM consisted in sine-square oscillators, double pulse and signal generators, a filter, an amplifier, two Brenell tape recorders, as well as a number of tapes, empty spools, splicers, splicing tape, leader tape, razor blades, scissors, yellow wax pencils, and a tuning fork. The timetable of the studio officially began on 8 February 1963, when an introduction to *Gesang der Jünglinge* (1955-56) by Stockhausen was organised and then repeated the day after for a concert at Wadham College. On 22 February 1963 Davies received the engineer Mike Scott[50] in the studio for the first time. On that occasion Davies experimented with chords and improvised with the three sine-wave generators by superimposing loops cut from such material to create a three-layered sound to which white noise was added, while no use of the square wave was made. The most important production at OUSEM was the composition of sounds for the theatre play *The Dream of Peter Mann* (1963). This play was written by Bernard Kops (1926-) and directed by Mike Wynn Jones (1941-). It was one of OUSEM's first productions, which Davies realised with the help of Hill. The play starred Michael Dennis[51] as Alex the tramp, and was presented at Worcester Gardens as part of the Worcester Buskins Summer programme from 27 May to 1 June 1963. In the performance bill, it is significant that the work done on sound, the effects, and the electronic sounds were listed separately. Indeed Jeremy Swayne[52] took credit for the first, Peter Fenwick[53] for the second, and Davies for the third. Despite the incidental nature of the composition, this seems to point to an emancipation of electronic music from being considered merely as 'effects' or part of the sound design – and thus granted

a more creative role within the production. Much of Davies's work done in composing for the play originated from a session carried out at OUSEM on 8 March 1963. This session in particular was to prove the most satisfying experience in the studio for Davies, when all the equipment needed, apart from a mixer unit and a third tape recorder, was in place. In this session, Davies used white noise and the Audio Frequency (AF) Analyzer as a bandpass filter. The outcome was substantial, and Davies recorded material occupying the whole of a side of a tape. To this material Davies added reverberation and further edited it. In the same session he also added reverberation to a short passage of microphone noises on the first tape, which was recorded on a second tape with further reverberation.

Another production for the theatre realised at OUSEM was the suite in three movements ('Prelude', 'Incantation', and 'Dénouement') for *The Scarecrow* (1963). Davies also worked on this piece at Tower Folly and at another temporary studio set up in Edinburgh where the play ran. Davies composed the 'Ballad for the scarecrow' for the play, which had a graphic score. In this score, all aspects of the notation were approximate. For instance, complex sounds were only represented by their most prominent notes, while timbre was only occasionally implied: by thickness of lines and the amount of pulsation, if at all. The score was first written on graph paper then on white sheets, on which Davies drew lines across a box-strip outlined in pencil. With *The Scarecrow* Davies united two strategies he had discussed in his undergraduate dissertation at Oxford: electronic music and indeterminacy, two paths that would indeed also be significant in his later mature works.

At OUSEM Davies also carried out work that he would later use for *Three Nightmare Sequences* (1964), a piece that was a combination of tape music and orchestral instruments. There he also composed the incidental music for the ballet and mime piece

Hang Down Your Head and Die by David Wright (1941-), which was completed on 2 July 1964 for a production by the Oxford University Experimental Club, directed by Braham Murray (1943-) and designed by Michael Ackland. The play was a documentary entertainment tracing the history of capital punishment and showed from 11 to 22 February 1964 (two weeks) at the Oxford Playhouse. It later moved to London and gained the London Critics Award as best revue of 1964, before moving to New York, where it showed at the off-Broadway Mayfair Theatre.

Despite the optimism concerning the establishment of the studio, and the activity surrounding it, the precarious nature of such enterprise was to determine its short-lived life. Regular transport, which was to be provided by Jonathan Coles[54], was a crucial issue in keeping up with a regular schedule. For instance the session scheduled for 1 March 1963 was cancelled because of the lack of transport, a problem that repeatedly hindered further work in the studio with dates cancelled on 10 and 17 March. This experience at OUSEM might have taught Davies the importance of having equipment that did not cause an over-reliance on transport, equipment that was compact and portable, an issue that was a crucial aspect of his invented concert instruments. The last official session at the studio occurred on 31 March 1963, which was marked by seemingly faulty equipment.

2.4. The *Répertoire international des musiques électroacoustiques*.

The difficulties that both Oram and Davies experienced in setting up an electronic music studio are understandable in the context of the expense and the size of the technology that was available at the time. Gordon Mumma (1935-) divided the basic configuration of an electronic music studio into four parts: the general manipulation

apparatus (tape transports, recording and playback amplifiers, and mixers); sound sources (electronic oscillators and stored material of acoustical origin); modification apparatus (filters and equalizers, transposition devices, gating and envelope control, and reverberation); and accessories (power supplies, monitoring and analysis equipment such as meters, loudspeakers, oscilloscopes, splicers, bulk eraser, etc.)[55]. In the 1960s, a typical electronic music studio would have cost about $25,000[56] (equivalent to $180,000 or £118,000 today). This would ideally have consisted of insulated, air-conditioned rooms, and its electronic equipment might have included two channel Ampex recorders, a dozen sine-square wave oscillators, and a battery of equipment for the modification of sound such as reverberators, band-pass filters, and waveform oscillators, as well as mixing and switch panels. The items in the studio could have included tables, a library of tapes, and a piano. In the early 1960s, studios had begun appearing across Europe in Poland, Holland, Belgium, Italy, as well as Japan and more numerously in the US. In Europe and Japan electronic music studios flourished in radio stations, but in America and the UK, where these organisations were differently funded, the establishment of electronic music studios was to take place mostly at colleges and universities. In a climate of expansion across the world, work on collating information regarding this flourishing activity must have been seen as increasingly useful, if not necessary. Indeed, the cataloguing of the various compositions realised in the electronic music studios of the world, as well as an account of the equipment used, would have served the extremely important role of creating a history of electronic music – a history that asserted the extent and relevance of such genre and practice. Such a project would have thus raised awareness among the public, and most importantly among composers. It was necessary to assess the possibilities and scope in the research in sound that studio technology had made viable. It was also important to gather this information in order to reach a standard in the equipment and the practice of electronic music, establishing

what were the material and theoretical foundations of this genre. These endeavours must have been increasingly seen as crucial to develop a greater critical understanding of the implications of working with electronic technology in music. Of the thirty officially sponsored studios in the world in the early 1960s, thirteen were at radio stations, ten at universities, and only seven had been set up at private institutions. This was a fast changing landscape and by 1970 in the US alone there were over two hundred studios functioning, including the studios at Princeton, Yale, Brandeis, and Mills College. Davies's work on compiling RIME was therefore momentous, since aiming to list all the electronic music studios was an ambitious project in 1967, but would have been impossible by the early 1970s.

2.4.1. The context of the catalogue.

In February 1967, Davies moved to Paris in the XVI arrondissement where the Centre Bourdan of the Groupe de recherches musicales (GRM) was housed at the Office de Radiodiffusion-Télévision Française[57]. Davies's job was to compile the second edition of the *Répertoire international des musiques expérimentales*, which detailed the World electronic music studios, works, equipment, and would also comprise a bibliography. The publication of an international catalogue of information on experimental music was decided at the XXIV Biennale of Contemporary Music, which took place in Venice in April 1961. The first edition of RIME was updated until July 1961 and published in 1962. Various studios collaborated in this project, including RAI, WDR, Columbia University, Princeton, and the RTF. The publication aimed at facilitating the exchange of information on existing experimental music centres, so a questionnaire was drafted and sent to all known studios of experimental music throughout the world. The first edition consisted of five parts: the first was a catalogue of pieces arranged in

alphabetical order according to the French name of the countries of origin, and in chronological order of the dates of composition. This index also mentioned the name of the author, the title, the date of composition, the length of performance, the standard of recording, as well as basic information on reproduction data, such as the first performance, first broadcast, etc. The second part listed the equipment used throughout the process of making electro-acoustic music from production to mixing, and from recording to analysis and diffusion. A third section gathered bibliographical information of historical, technical, critical, and theoretical material relating to this music genre. The fourth part consisted in a discography grouped in alphabetical order of country of origin and in chronological order of impression with detailed information of the title, the composer's name, the editor, and the catalogue references. Finally, the fifth part had a list of addresses of the studios mentioned previously (see appendix 1, figures 60-61). The composer François Bayle (1935-), a student of Olivier Messiaen, Pierre Schaeffer, and Karlheinz Stockhausen, and who was then in charge of the GRM, commissioned the work on the second edition and Enrico Chiarucci[58] was appointed its supervisor. The edition was originally intended as a follow up to the first publication, which had become obsolete, and it aimed at being more comprehensive, indeed under Davies's 'detective' work, it developed into a more substantial survey than its predecessor. The survey's deadline date was set to the end of 1966, and it was later published as an amalgamation into a single volume of numbers 2 and 3 of the Electronic Music Review in April and July 1967 and as a hard copy edition by MIT Press in 1968. The second edition of RIME was a cooperative edition of the GRM and the IEMC. The catalogue cost $10 ($130 or £85 today) in the hardback MIT Press edition and was free to subscribers of the Electronic Music Review who received in paperback; single copies in paperback could also be purchased for $2.50 ($17 or £11). Reynold Weidenaar[59] was the chief editor and director of IEMC at the time and Robert Moog (1934-2005) was the

technical advisor. Davies drafted a more thorough, structured questionnaire for the second edition that aimed at gathering a more comprehensive documentation on the greater number of studios that had been established since the first edition of RIME, which only listed eighteen studios (twenty in total were contacted), and the greater number of compositions that were realised since 1961, which made up two thirds of the total of the pieces listed. The need for an accurate, uniform, and complete compilation of what were the activities surrounding experimental, electronic, and electro-acoustic music seems to have been the reason for appointing one person to carry out the survey. Stockhausen recommended Davies for the job, but Davies had also significant experience that made him suitable for the task, for instance the publishing of his 'Discography of electronic music and musique concrète' in October 1963 for the BIRS. It was in fact around the time of finishing the BIRS publication that Davies came into possession of the first edition of RIME. Davies had started drafting a paper surveying electronic music as early as July 1961 while he was at Westminster School. His meticulousness in cataloguing material is evident in his own collection and archive at the British Library. For the second edition of RIME, Davies devised a questionnaire in three parts and three sections, each inquiring after the works produced by the studio, its facilities, and the disc catalogue number. The questionnaire also included documents on the analysis, presentation, or critique of the pieces produced in the studio, and methods used, as well as about the studio itself. Lastly the questionnaire asked to provide a general bibliography on experimental music. A number of publications surrounding electronic music had appeared around the time of this edition of RIME, such as Lowell M. Cross[60]'s 'Bibliography of electronic music', brought out in 1967 through the University of Toronto Press. In the same year Sven Hostrup Hansell[61] had compiled 'A provisional list of electronic music compositions', published in the eleventh number of the Experimental Music Studio Technical Report of the University of Illinois. Neither

of these catalogues, however, offered as complete a survey on all electronic music composed and detailed directory of studios, as the second edition of RIME. In total, the catalogue listed 5,070 works produced in 560 electronic music studios in 39 countries by 935 composers.

2.4.2. The structure of the catalogue.

In the catalogue each studio was assigned a different category according to the sort of equipment available, which was labelled with the initials *po* for permanent official, *pp* for permanent private, *io* for improvised official, and *ip* for improvised private. 'Improvised' equipment was described as used primarily for other purposes and assembled in occasion of composing a particular piece. The minimum equipment required in order to classify a studio as improvised was a microphone and a tape recorder[62]. Each piece was also given a function category, depending on what use was made of the piece, and allowing for a combination of these. For instance, *C* stood for concert work of tape alone, while *C*+ for tape and instruments, while *C** for live electronic music. Also included were date, duration, and number of tracks of the piece. Other categories included were ballet, marked as *B*, theatre, marked as *Th*, musical theatre and happenings, *Mt*, and experimental study, *St* (see appendix 1, figures 62 and 63). Signature tunes and music for film, radio, and TV were included, but sound effects were excluded, although the line dividing the two often may have been rather unclear, especially in the case of the RW, which had a considerable output of various commercial and incidental music productions. The catalogue also used gender symbols to distinguish the women composers who worked in the field and thus promoted the electronic medium as a suitable means for women composers, a decidedly feminist

stance that might have been inspired by the example Oram had set in the field, and which Davies was very well acquainted with.

In the UK, the majority of the studios were concentrated in London: of the 37 active studios, 26 were in London and 1 in Scotland. Of the 26 studios in London only 9 were permanent, which however made up half of the 18 permanent studios in the country. Listed as having their own permanent studios were Daphne Oram in Fairseat, Davies in London (this was his own personal studio set up in his bedsit in Belsize Park), Roberto Gerhard in Cambridge, Desmond Briscoe in Staines, and Peter Zinovieff at the Unit Delta Plus studio in London. Zinovieff's studio was located in Putney and served both as a composition studio and as a research and demonstration studio for EMS Ltd., where the Computer Synthi, which was capable of controlling the Synthi 100 or any other large synthesizer, was realised. The Beatles were also listed as having an improvised permanent studio in London at Parlophone Records, where they realised the songs 'I'm only sleeping', 'Tomorrow never knows', and 'Strawberry fields forever', and were said to be in preparation of the album *Sgt. Pepper's Lonely Hearts Club Band.* Davies would elsewhere praise The Beatles' commitment to using electronic music studio techniques[63]. In fact popular music later became the musical genre that embraced electronic technology more than any other. Indeed the catalogue made apparent how working in an electronic music studio was necessary for the production of music that was relevant to the times, to the extent that electronic music could no longer be considered an isolated genre, but that rather it invested all aspects of musical practice.

2.4.3. Assessment and reception.

Despite the greater accomplishment of achieving as complete a survey as possible, the second edition of RIME could hardly ever have fully reached its goal, because of the constant need to update the information. Davies continued to add information on RIME making manual notes on his copy of the catalogue up until his death, 36 years after its publication. Davies himself suggested in the preface of RIME that perhaps a computerised version of the catalogue would have been a more suitable option, since the number of studios around the world was fast expanding[64]. Jon Appleton (1939-) calculated that it would have cost $2,500 ($18,000 or £11,700 today) to encode and store RIME in a computer database and a further $100 ($700 or £460) per month to keep it up to date[65]. In any case, with over 5,000 works listed, the catalogue achieved the purpose of representing the widespread use of the electronic studio and the popularity of electronic music. RIME, thus, promoted electronic music at a time when there was little information on the use of electronic technology. It facilitated the selection of pieces for programmes, and its integration into the music establishment, since it offered proof of the increasing use made of it in the music making process.

The response to the catalogue was extremely positive. For example, Tristram Cary described it as a 'first-class index'[66]. Berio personally told Davies: 'you seem to know everything!'[67]. Lejaren Hiller echoed this sentiment by describing Davies's research skills as 'like the CIA'[68], while György Ligeti (1923-2006) praised the depth of his investigation[69]. Owen Anderson commented that 'the result of what must have been a staggering amount of research, the book would appear to be of inestimable value to everyone interested or involved in the new medium'[70]. The relevance of RIME proved lasting; Sten Hanson (1936-2013) claimed in the late 1970s that 'this labour of Hercules

is still a fundamental resource'[71]. In 1981 Andy Mackay described it as 'monumental'[72]. Max Matthews (1926-2011) added:

'The Catalog has been compiled with great care in an area where many compositions are created and forgotten each year. The listing is of inestimable historical value and of the greatest current practical usefulness. The Catalog is unique particularly because of its worldwide coverage. Mr Davies should be complimented for doing a difficult and essential task so well. The book is an essential reference in electronic studios'[73].

2.4.4. Issues with the catalogue.

Despite such accolades Davies was hardly satisfied with the edition. In a letter dated 4 July 1968 and addressed to Carroll G. Bowen, the director of MIT Press, he expressed his indignation in witnessing several errors in printing; for instance, in the accents of the Czech and Polish names he had painstakingly reproduced. Davies also claimed to consider an insult that the text in the dust jacket contained so many inaccuracies. The text stated that Davies had been an assistant at the 'Karl Heinz [sic] Stockhausen Electronic Music Studio'[74], a studio that Davies pointed out had never existed, adding that he had never been associated with any electronic music studios in Cologne before or during the compiling of the catalogue. Davies concluded his letter of complaint with: 'I am sorry I have so much to complain about but good intentions are not sufficient'[75]. Other issues arose with the publication of RIME. For instance, attributing authorship of the compositions realised in the electronic music studio proved problematic. Indeed, distinguishing between the functions of sonorisation (or arrangement) and that of composition was difficult. While Davies considered music and sound to have a substantial difference in the three-dimensional quality and the feeling that music could generate (an early example of this theory was the policy of separating sound, effects, and music in the billing of the Oxford play *The Dream of Peter Mann* discussed earlier in this chapter), Appleton wondered about the vague identity of the composer in an

electronic music studio, asking: 'the usual answer is based on aesthetic judgement, but what happens when the "composer" is guided by a "technician?""[76]. This was an issue that had already been raised by Oram at the time of Davies's compilation of the discography for BIRS. Indeed, in a letter dated 22 September 1962 she wrote:

> 'I should think that a number of the composers we are including have been not much more than "on-lookers" in an electronic studio – rather like the BBC set up where composers doing incidental music may ask the Radiophonic Workshop to provide a background sequence and may go along to the Workshop to watch it being done, but themselves take no creative part to it"[77].

Davies encountered the same issue during the work on RIME and had tried to include the technical staff as much as possible, but had ultimately concluded that too often their contribution in the compositional process had remained unacknowledged. For instance, the role that Enrico Chiarucci had at GRM, proved problematic to define, and Davies found it hard to define it in any other terms than 'engineer'[78].

Another contentious issue surrounding the publication was the attention given to technical specifications and the equipment used to produce this genre of music – in other words the focus on the medium rather than its message. Such focus was interpreted by Appleton as a clear commercial interest that the R.A. Moog Company had in selling their equipment to the universities, which hosted many of the electronic music studios. Appleton claimed that although RIME was not a 'house organ', its association to a manufacturer of equipment for the production of electronic music compromised the scholarly aim of the publication[79]. Indeed the Electronic Music Review, which originally issued the catalogue, was a quarterly publication of the Independent Electronic Music Center (henceforth IEMC) at the R.A. Moog plant in Trumansburg, New York. Nonetheless, whatever vested interests the R.A. Moog Company might have had in the publication of the catalogue, these cannot be taken as the sole measure for the accomplishments of RIME. There is no reason to doubt the

intentions and ethics Davies had in compiling such a catalogue. As demonstrated in this chapter Davies had a personal interest in electronic music and had already carried out research in the field. Furthermore he continued to update the catalogue long after such information would have made any commercial difference.

2.4.5. The impact of technology.

In addition to Davies's integrity in compiling the catalogue, the doubts raised by Appleton seem to also disregard the important role that equipment had in electronic music, which to Mumma was as essential as choosing an instrument by a musician[80]. Stockhausen echoed this sentiment; in 'Stockhausen's electronic music' Davies claimed that 'any violin music can be performed by a good player with tolerable results even on a cheap violin, whereas a cheap tape recorder does not include many of the features of a more expensive machine, such as fast speed and tempo'[81]. Such observations underlined the tremendous importance and impact that electronic technology was able to impart to the resulting sound. It also highlighted the possible gap that existed between the equipment that would have been affordable by an electronic music composer and that available at an institution, thus stressing the necessity to allow greater access to more sophisticated equipment, in order to have the possibility to use all the resources that the new technology offered. It is no surprise, therefore, that the majority of electronic music that had been composed in studios was carried out in established practices at academic institutions, state-supported radio stations, or at electronic equipment manufacturers. However Mumma lamented the shortage of supply of studio time in relation to the demand, which often resulted in a tight studio schedule, barely allowing a sufficient time to use the specialised equipment available. As an alternative Mumma suggested the setting up of a personal studio, but because of the inevitable economic

considerations, other than the engineering responsibilities, compromise on the quality and sophistication of the equipment was necessary[82].

2.5. The Electronic Music Studio at Goldsmiths College.

2.5.1. The founding of the studio.

On the night of 6 and 7 February 1966 Davies wrote an account of his own studio 'wishlist'. This list included: two Revox stereo tape recorders, loudspeakers, sine and square wave generator, Telefunken 300 portable loudspeaker filter, two or three microphones, one Sennheiser microphone, two loudspeakers, mixer, filter, between four and six amplifiers, eight contact microphones, one pair stereo earphones, one or two circular plates for playing 'radio' tapes, transistor radio, tuning fork, tape loop rack, 1 electro-magnet as well as a series of instruments and miscellaneous accessories like wires, jacks, screws[83]. He would later concretise some of these wishes with the set up of the Electronic Music Studio at Goldsmiths College in London.

The work that Davies had done in setting up his own private studio in London and the knowledge he had acquired in surveying the activities of other studios in the world, as well as his experience of working with Stockhausen, may have certainly been behind the offer of setting up the electronic music studio at Goldsmiths college – and also why he accepted the job. Before then, Davies had turned down an assistant director position at IEMC to look for a grant to study computer music at Imperial College, but this did not come to fruition and by late October and early November 1967 his position as director of electronic music studio at Goldsmiths had been verified. The first piece of equipment was purchased in 1967. In January 1968 an evening class began. This was a three-term course that ran on Tuesday evenings at 7 pm, which was attended by about

forty people; it was the first such course to run in Britain. The classes ran alongside occasional sessions for small groups. The studio initially shared facilities with a physics laboratory in its first two terms, as OUSEM had done before, with the equipment having to be stored away in cupboards when it was not used. By 1968, however, it had a room of its own. Davies credited the creation of the studio to the Head of Music for the Adult Studies Department (and later Head for the full-time department as well), Stanley Glasser (1926-). Glasser had hoped to establish such a facility for some time[84]. He had strategically created the course on electronic music first, and later stressed the importance of practical work for such a course, thus leading to the establishment of the studio, which ultimately resulted in a specific room being assigned to it where the equipment could be permanently stored. The initial equipment consisted in three Revox tape recorders, a stereo mixer, one air and a couple of contact microphones, a stereo amplifier and loudspeakers, followed a few weeks later by a sine and square wave generator. This was far from what Davies had hoped for in his wish list and indeed he lamented a lack of funds as a cause for the studio failing to expand substantially, as well as the lack of appointed full-time personnel. In September 1976, the studio equipment had grown considerably to include two VCS3 synthesizers, two Revox A77 with different variable speed-device, and two Revox G36 among other pieces of equipment[85].

2.5.2. Other studios in the UK.

Other institutions quickly followed the Goldsmiths example. Indeed, shortly after its opening, other studios were established at York University and at the Royal College of Music. The York University studio was characterised by a noticeable activity. The studio was under the direction of Richard Orton, who would later be a close collaborator of Davies (see next chapter). At these institutions, as at Goldsmiths, the grants and income

necessary for the maintenance and supervision of the equipment could be justified in terms of teaching-course requirements, while also carrying out composing and researching at the same time. Nonetheless the advantage of having no commercial pressures and the expenses paid by the hosting University department were contrasted by the disadvantages of the financial difficulties and lack of resources that such a system was plagued with. The problem of British studios was twofold: on one hand the resources needed to establish an electronic music studio stretched the University internal funds. On the other, when funds were obtained, these were awarded on a 'once-and-for-all' basis, especially in the case of large items of equipment. Studios were thus unable to keep up to date with the latest developments in hardware. The studio at Durham University (established in 1970), which focused on digital technology, had little income for large equipment items, so that Peter Manning (1948-) had to substantially alter the equipment available to him to suit his needs, which resulted in a work of building, testing, and modifying each unit. The studio at Glasgow University, directed by Stephen Arnold[86] and established in 1974, despite the excellent facilities (it had a 16-channel tape recorder and a Synthi 100) was in a financially precarious state. The studio however navigated this situation by being designated as a regional studio for which bursaries for composers resident in Scotland were awarded, since the Scottish Arts Council had provided 25% of its funds.

2.5.3. Davies's attitude towards composing in the studio.

Despite the knowledge and experience that Davies gained about electronic music studios, he composed few studio-based works. For instance, during his career as a composer, Davies realised only a small number of tape pieces. The first major tape music piece was *Natural Images*, composed in 1976. This was originally a live

performance for dance, and it was only because the EMMA dance company decided to tour with the work that Davies recorded the material and further processed it electronically. In the tape version Davies made the most of the possibilities offered by the medium and went further than what had been possible to achieve in the live version, however, it cannot be disregarded that the initial impetus for producing this piece was mainly to obviate a practical issue. The other tape works composed by Davies are mainly from the mid to late 1980s: *Tapestries* from 1983 (which was another work for dance), and *Vision*, *Celeritas*, and *Strata* all from 1987. This is telling of Davies's priorities when compared with the hundreds of musical instruments he invented, and even with the number of works for traditional ensemble he composed (see chapters 5 and 6). Such an attitude towards studio-based work may seem contradictory for somebody who, like Davies, compiled RIME and directed the electronic music studio at Goldsmiths college for about 20 years (from 1967 to 1986). On the other hand, Davies may be considered to have had a wider vision within the electroacoustic studio. Davies's concern was to produce live electronic music, and bring some of the techniques used in the studio to the concert hall dimension. Such interest could be traced to his work with Stockhausen, who, in the 1960s was also seeking to integrate electronic sounds in the realm of live performance. It could be argued that both Stockhausen and Davies's interest in live electronics as opposed to tape composition marked a return to conventional musical practice, however, on inspecting the work that they realised in the field it is evident that the adoption of a live experimental electronic music practice was a more complex strategy than simply reinstating traditional musical values.

3. The influence of Karlheinz Stockhausen.

Working with Karlheinz Stockhausen was of fundamental importance for Hugh Davies. Not only because such an experience would have been regarded as prestigious, since Stockhausen was already recognised as one of the leading composers of the post war years and it would have thus helped further his career, but also because Stockhausen's aesthetics shaped those of Davies. In this chapter I will be concerned with the role that Stockhausen played in Davies's work and in the development of experimental electronic music in Britain, for instance by examining the work of Gentle Fire. I will survey the newspapers' reaction to Stockhausen's first visit to the UK in 1965 to clarify the reputation that he enjoyed in the country and also to gain a perspective on the appraisal of new music in Britain at the time. Finally I will turn to another former assistant of Stockhausen, Cornelius Cardew, to outline the political, social, and artistic project that characterised his work, and which mediated the climate of radicalism of the late 1960s and early 1970s that is also essential in understanding Davies's work.

3.1. Davies's work with Stockhausen.

3.1.1. The book on Stockhausen.

In the '*Momente* lecture' given in January 1994[1], Davies said that one night, in the summer of 1962, when he was a 19 year-old student at Oxford University, he had tuned in on the radio to hear a broadcast of the first performance of Stockhausen's *Momente* by the WDR. Davies said on that occasion he only got 'a faint taste of the music'[2] but that he would later come to know this piece, along with others, very well because of the work he was to conduct with the German composer. Davies described Stockhausen as

'a deliberate rebel against tradition, formally, and musically'[3] and predicted Stockhausen's position as one of the greatest composers of the twentieth century[4]. Davies had the opportunity to study Stockhausen's work more closely in 1963, when he was asked to write about his music for the book commissioned by Clarendon Press in Oxford[5]. Davies had championed the music of Stockhausen early: the first session at OUSEM featured an introduction to Stockhausen's *Gesang der Jünglinge*, which was then repeated at a concert at Wadham College. The book Davies was to write was originally to be titled *The Music of Stockhausen*, later shortened to *Karlheinz Stockhausen*, and was to be part of the Oxford Studies of Composers. It was to be featured in an otherwise rather traditional series that included studies of John Dunstable (c.1390-1453) by Frank Harrison, Luigi Cherubini (1760-1842) by Basil Deane and Luca Marenzio (1553?-1599) by Denis Arnold. Davies's text was set to be 15,000 words in length and in a first draft it was conceived in six chapters, each of which indicated a distinct period in Stockhausen's oeuvre, proceeding in chronological order. Thus the first chapter dealt with Stockhausen's beginnings up until 1952, while the second chapter's subject focussed on strict serialisation, covering the years between 1953 and 1954. The third chapter was entitled 'More freedom' and reviewed the music Stockhausen composed between 1954 and 1956. Chapter 4 discussed the works composed up until 1957, which to Davies represented the 'culmination of this period [the freedom years, Ed.]'[6]. In chapter 5 Davies wrote about the graphic scores and chamber works Stockhausen realised at the end of the 1950s, and in chapter 6 he was concerned with the works composed after 1959, which in Davies's opinion allowed even more freedom to the performer.

In a later revision of this draft the chronological structure was abandoned in favour of a more thematic arrangement of the chapters around stylistic features of Stockhausen's

music. In this text Davies was concerned with Stockhausen's studies in Cologne and Paris in the first chapter, followed by the electronic music he composed between 1954 and 1956 in the second; chapter 3 was entirely dedicated to the piece *Gruppen* (1955-57), while chapter 4 focussed on Stockhausen's percussion music. Chapters 5 and 6 examined his early and latest compositions respectively. Davies had been in contact with Stockhausen regarding the book, asking for advice and information. Davies claimed that his views on how to approach the book were rather different than those of Stockhausen, but that they ultimately agreed in general terms on how to write it[7]. Davies worked on this project for several years, and was engaged with it during his assistanship with Stockhausen, but never reached its satisfactory conclusion.

In a letter dated 13 September 1964 Davies wrote to Stockhausen enquiring about *Klavierstücke V-X*, *Carré*, and *Kontakte*. In July 1965 Davies was still planning to publish the book, and in a letter dated 15 January 1966 he wrote that he was working on two books, one on Stockhausen's music, and the other on electronic music[8]. In a letter dated 18 September 1966 and addressed to Davies, the editor at Oxford University Press, Colin Mason, mentioned his disappointment at Davies's lack of enthusiasm in continuing his work on the book. Mason expressed his wish to publish the book, but Davies described the text as 'unexciting'[9]. Mason tried to encourage Davies in completing this work, reassuring him about the importance of this effort, citing the interest and value of such a publication. Mason believed that there might have been only a week's worth of work to finally complete it, since the core of the book had already been written[10]. Nonetheless Davies was never to publish the text. At the origin of what seemed to have been Davies's extreme self-criticism, was his impression that a book on Stockhausen should not have been concerned exclusively with analysis, but rather have a more appropriate focus on Stockhausen's aesthetic aims, as well as

discussing the nature of the musical experience his music offered the audience. Despite his attempts, Davies never felt he achieved these goals, however in the manuscripts of the drafts now held at the British Library it transpires that he had nonetheless succeeded in challenging a series of misconceptions about Stockhausen's music at the time, such as the extent of the mathematical foundation of his work.

3.1.2. The assistantship.

The book Davies was writing on Stockhausen was crucial in getting them in touch; later Stockhausen offered Davies a job. In a letter dated 3 November 1964 Stockhausen wrote:

> 'There had to be silence. I was trying to find money. My editor refused to collaborate. Since yesterday I have found the money. I sold manuscripts. Now I want you to become my permanent collaborator for one and a half years minimum. If after this time you and I want to continue, we will continue. I will pay you 600 DM every month; I will try to get you invited too, when I travel; but I cannot give you a guaranty [sic] for paying travel-expenses…What concerns room [sic] to live in I have a solution. You first speak with my wife, who owns a house in Köln-city, then we will see if you need move [sic]'[11]

Stockhausen ended this letter with 'welcome!' written in capital letters (see appendix 1, figures 57-59).

Davies, as he pointed out in his letter to MIT Press after the publishing of RIME in 1968, did not work with Stockhausen in an electronic music studio, but as secretary and personal assistant to the composer. One of Davies's main occupations was to deal with scores: the correspondence with the publishers, their translation, proofs and corrections. This was a task he continued to perform for Stockhausen long after he had left Cologne. Universal still relied on Davies for translations more than a decade after the termination of his assistantship. In a letter dated 16 August 1979 about *Musik Im Bauch* (1974) Jayne Stephens[12] wrote: 'you are one of the few people we know who has a

good command of the English language and [underlined in the original letter, Ed.] who is familiar with this piece'[13]. On 27 May 1981 about *Sirius* (1975-77) Stephens wrote: 'the translations of the instructions from the score are now finished and I would feel much better about printing them if you had read through and corrected them where necessary'[14]. Whilst Davies was Stockhausen's assistant, he worked at editing scores for works such as *Momente*, as well as being involved in dealing with Universal about the scores of *Elektronische Studie II* (1954) and *Mixtur*. Davies also translated the scores for *Spiral*, *Carré*, *Mikrophonie I* and *II*, and *Momente*. He also wrote letters, organised concerts, and dealt with music labels. This experience gave Davies an understanding of the practical aspects of being a full-time composer, an experience that would reveal to be useful later on. Indeed Davies realised his own work with a marked independence and single-mindedness, which I claim to be a consequence of the knowledge and confidence he acquired whilst working with Stockhausen. Nonetheless the relationship with Stockhausen proved sometimes difficult. In a letter dated 14 April 1965, around the period of rehearsal that preceded the performance of *Gruppen* in Munich on 14 May 1965, Davies wrote: 'I must confess that I am not looking forward to the fortnight that he [Stockhausen, Ed.] will be here before the tour, as nobody will have an easy time of it'[15]. In a letter dated 5 December 1966 Stockhausen, who at the time was at the University of California, wrote to Davies about a text on *Momente* that Davies was to publish in the journal *Melos*. Stockhausen claimed to have corrected the text to the best of his abilities and declared himself to be 'frightened at what the other text looked like' and underlined his insistence in seeing it before it was printed[16]. Nevertheless, Stockhausen recognised the contribution that Davies brought to his work. For instance, in a letter sent from Tokyo on the 3 March 1966 Stockhausen wrote: 'about *Punkte* I accept what you have decided: you should be happy as long as you work with me'[17].

Davies later claimed to have concluded his work with Stockhausen so that he could concentrate on developing his own work[18].

3.1.3. Stockhausen's works during Davies's assistantship.

Stockhausen's aesthetics were extremely influential in the development of Davies's own work. The work that Stockhausen was conducting while Davies was his assistant proved to be particularly influential. Both the 'freedom' that Davies had discussed in his unpublished book on Stockhausen and the pursuit of a live electronic music were to become Davies's main concerns in his inventions of new musical instruments. When asked by Alfred Schlee from Universal Edition to contribute to a volume dedicated to the interpretation and performance of some works by Stockhausen – who had personally recommended him for the job – Davies set out to write on Stockhausen's live electronic music, confirming the influence that Stockhausen's work in the field had had on him[19].

In 1964 Stockhausen had completed *Plus-Minus*, which signalled a move towards a different kind of scoring and structuring based on a principle of process rather than of the finished work. This greater experimental understanding of music would then culminate in *Momente*, which Stockhausen had worked on from 1962 to 1964, and revised a few years later also with the help of Davies. In *Spiral*, a score translated by Davies, a soloist imitated, transformed and transcended events received on a shortwave radio by using any instrument or instruments and, or, voice, while microphones and loudspeakers were also required to amplify and spatialise the sound. Between 1964 and 1966, while Davies was his assistant, Stockhausen wrote pieces for live electronic music such as *Mikrophonie I* (which will be discussed in more detail later), *Mixtur* for orchestra,

four sine-wave generators, and four ring modulators, and *Mikrophonie II* for twelve singers, Hammond organ or synthesizer, four ring-modulators, and tape. In *Mixtur*, for instance, the amplified instruments of four of the five groups, in which the orchestra had been divided, were ring-modulated each by a sine-tone generator. *Stop* (1965) and *Solo* (1965-66) both included microphones as essential instrumentation. In *Solo*, *Telemusik* (1966), and *Hymnen* (1966-67) sound projection was a necessary feature (also in the later 1969 'Paris version' of *Stop*). In these works the most significant features were the modification of vocal and instrumental sounds in real-time with the aid of electronic equipment but without using tape recorders, as well as the establishment of diffusion as a performative element. Stockhausen's interest in real-time interaction between the sounds produced by the performers and electronic sounds had its origins in *Kontakte* (1959-60), a piece for piano, percussion, and electronic sounds. Among the percussive instruments used in *Kontakte* were African wood drums, marimbaphones, bamboo chimes, and a snare drum. A large tam tam also featured at the centre of the stage. The title of the pieces referred to the attempts at making 'contacts' between electronic and real sounds.

3.1.4. *Mikrophonie I*.

The work by Stockhausen that proved to be most influential for Davies was *Mikrophonie I*, in which Davies took part in its first performances under Stockhausen's direction. *Mikrophonie I* marked the point from which Davies developed his interest in live electronic music, a departure from his early student electronic music compositions that were based on tape, such as *Essay for Magnetic Tape*, and the incidental music he realised for the theatre whilst a student at Oxford. Stockhausen described *Mikrophonie I* as his first live electronic music work[20]. Indeed this was an extremely significant work not only

in Stockhausen's and Davies's careers, but also in the history of electronic music. Cardew observed that *Mikrophonie I* and *II* represented an attempt to bring electronic music to the concert hall[21]. In fact these pieces offered a different kind of music making experience, as they did not feature tape as the medium by which such sounds could be reproduced. The use of real-time electronic processing in the *Mikrophonie* pieces created what Cardew called an 'interplay between "natural" and "doctored" sounds'[22], which would have disappeared if the sounds were heard from tape – a criticism that Pierre Boulez had advanced with regards to *Kontakte*[23]. Indeed *Mikrophonie I* represented a further attempt by Stockhausen to unite electronic and instrumental music after *Kontakte*. The tam tam that featured in *Kontakte* was the sole sound source used in *Mikrophonie I*. Such a restriction in the instrumentation revealed Stockhausen's intention to focus on the manner of playing, on the performance, as well as the capacity for transformation of the sounds by electronic means. *Mikrophonie I* fulfilled Stockhausen's goal to actuate real-time and live electronic transformation of sound. About *Mikrophonie II* he said:

> 'One of the most important reasons for exploring methods of timbre composition lies–as in all new music, especially electronic– in the desire to compose a unique and unmistakable soundworld for a work, and no longer to maintain the old contradiction which states that in composition the What doesn't matter so much–that is for example, the material (in this case choir and organ sounds)–it is rather the How–how one composes with such sounds–that is important'[24].

In the article 'The composer on his work' Stockhausen, in a translation by Davies, explained the genesis of *Mikrophonie I*. The German composer claimed that in the summer of 1964 he had been making experiments on the large tam tam that he had previously bought for *Momente*. Stockhausen had been exciting the tam tam with disparate objects he had found around in the house made of different materials such as glass, cardboard, metal, wood, rubber, and plastic, which he amplified with a strongly directional microphone. This had resulted in a first recording where Stockhausen and

his collaborator Jaap Spek (who had also worked with Stockhausen on *Kontakte*) freely improvised with the set up, using the microphone placement to variously detect the sounds that were produced by the variety of ways in which the instrument was set in vibration with the found objects. Stockhausen described this method of amplification as acting 'like a doctor with a stethoscope'[25]. This experimental phase, in which different sound possibilities were explored, formed the basis of *Mikrophonie I*. The work, dedicated to Alexander Schlee, was first premiered on the 9 December 1964 in Brussels. According to Davies, the use that Stockhausen made of the tam tam in *Mikrophonie I* was unusual to the point of transforming it into an 'unknown instrument'[26]. He wrote:

> 'In a typical fashion he not only uses some materials to activate the tam-tam as a sound source but also "modulates" its sound with other materials, and uses it to act as a resonator to get others; in certain sections a small container, such as a glass or a plastic beaker, is used close to the microphone as an additional resonator'[27].

The performers of the pieces were divided into two groups of three. In each group one person excited the tam tam and the other operated the microphone, while the remaining member of the group was seated in the audience modulating the sound with a filter and a potentiometer. Davies was employed in the second group operating the potentiometer, which he claimed to have never used before[28].

As mentioned in chapter 3 the electronic equipment used played a fundamental role in the resulting sound. In general, Davies deemed the potentiometer and the ring-modulator as crucial in defining the soundworld of Stockhausen's live electronic pieces; to create what Davies considered a 'genuine Stockhausen sound'[29] he stressed the importance in respecting the technological specifications of his pieces, because of the general lack of standardisation of features in electronic equipment. Stockhausen was clearly aware of the importance that pieces of equipment had in his music and specified the particular kinds of filter, potentiometer and ring modulator to use in his works. For instance, in the scores for *Mixtur* and *Mikrophonie II* these are all indicated; with regards

to the Hörspiel-Verzerrer W 49 (W 49 Radio- play distorters) filters, which were build in-house at WDR, and used in *Kontakte* and *Mikrophonie I*, Stockhausen claimed that:

'Every instrument, every item of equipment, every technique can produce something unique, which can be achieved in no other way. Since that is the case, then we can speak of an original technique, and thus deal with an original instrument. If it is imitable, then it is also not worth much'[30].

3.1.5. Stockhausen in the UK.

Despite the increasing importance of Stockhausen as one of the leading composers of the European avant-garde, his popularity in the UK was mainly due to his writings rather than his music, which had not been widely performed up until the mid-1960s. Cardew attributed this situation to the expense and scale required to present Stockhausen's work[31]. The journalist Sarah Thomas lamented the misunderstandings of Stockhausen's music in England due to 'over-discussing and under-playing his works'[32]. According to Thomas, undue emphasis had been placed on technical problems, on one hand lamenting the misleading attention placed on the means rather than the ends, while on the other arguing that Stockhausen had composed a process rather than a result[33]. A useful example in understanding the climate in which Stockhausen's music was assessed in the UK is the response to his first visit to London in 1965, while Davies was still employed by him. On this occasion a programme of performances of his works and a series of talks were scheduled. On Thursday 2 December 1965 Stockhausen held a general forum organised by the Institute of Contemporary Art in London for the London Days of Contemporary Music. On 3 December the Goethe-Institut in London hosted a lecture in English by Stockhausen, illustrated with musical examples on electronic music. On 4 December the Commonwealth Institute in London put up a programme of music by Stockhausen introduced by the composer. For the occasion the New London Wind Ensemble, with John Tilbury (1936-) at the piano, Roger Smalley

(1943-) at the piano and celesta, Cornelius Cardew at the guitar, Eric Allen[34] on percussion performed *Refrain* (1959), *Zyklus* (1959), and *Zeitmasze* (1955-56) conducted by Marcus Dods (1918-1984). The reception Stockhausen enjoyed in London was extremely positive: the journalist Peter Heyworth went as far as claiming that Stockhausen's aesthetic philosophy marked a new era in Western art music, representing a departure from rationalism (which he believed ended in 1945), and a move towards a supra-rational approach that befitted the Age of Aquarius[35]. *The Irish Times* described Stockhausen's concert as an absorbing evening, defining his music as 'an important and serious reality'[36]. *The Times* music critic wrote that a full house honoured the forum convened by the composer[37], which was confirmed by Hugo Cole at *The Guardian*[38]. Cole gave an extremely positive review of the concert, praising Stockhausen's intention to find new roles for composers and performers with his indeterminate scores, and describing *Zeitmasze* as 'the gesture by which he hands responsibility back to the performer [which] matters more than the music itself'[39]. Martin Cooper's review for *The Daily Telegraph* was rather more critical, describing Stockhausen's works as 'aesthetically intriguing if sometimes too protracted, which sharpen the listener's wits even if they do not provide very much for them to cut'[40]. Nonetheless in the same article Cooper stated that 'he is an interesting figure on the musical scene, and it was a pleasure to explore his mind more closely'[41]. Stockhausen's visit to the UK in 1965 thus certainly raised his profile as well as that of new music in the country. Works by Stockhausen were performed in a concert for the BBC a year later, followed by performances at the Proms. Davies marked the ascent of Stockhausen's importance in a review for *The Glasgow Herald* by stating that the year 1968 had been the first year in which contemporary music had made a major breakthrough, and that it had also been the year of Stockhausen[42].

3.2. Gentle Fire.

1968 was also the year that Davies joined Gentle Fire, a new music ensemble that significantly contributed to the promotion of Stockhausen's work in the UK. Gentle Fire also developed a method of composition that was directly inspired by the German composer. Gentle Fire were one of a number of ensembles that promoted new music, such as for instance Intermodulation and AMM. These groups will be discussed later to give an overview of the practice of experimental and electronic music in Britain at the time.

3.2.1. Gentle Fire and Stockhausen.

Davies had been an advocate of Stockhausen's work as soon as he had returned to the UK. For instance he performed *Treffpunkt* and *Es* from *Aus den sieben Tagen* (1968) with the Arts Laboratory Ensemble. Nonetheless it was with Gentle Fire that Davies contributed more substantially to raising the profile of Stockhausen in the country. The members of Gentle Fire were Richard Bernas (b. 1950) Patrick Harrex[43], Graham Hearn[44], Stuart Jones (b. 1950), Richard Orton, Michael Robinson[45] and Davies. This line-up changed over the course of the group's existence, from its beginnings in 1968 to the last concerts that were given in 1975. The name 'Gentle Fire' originated in the hexagrams that were obtained during a consultation that the members made of the *I Ching*, inquiring about the path to take in their development[46]. The ensemble had formed in the summer of 1968 after a series of concerts that were given at York and Hull Universities by a group of students who had met at the experimental music classes that Orton was running on Saturday mornings at York University. These classes were held at the electronic music studio that was established at the university soon after

Davies had set up the Goldsmiths electronic music studio. Davies was not one of the founding members of the group, but he and Orton had met at Cambridge University in 1966 and kept in touch. In 1967 Davies had formed a duo with Orton. The duo gave ten concerts during that year, in which they performed live electronic music pieces composed by each member as well as giving the British premiere of Cage's *Electronic Music for 2 Pianos* (1964). Because of this activity and his experience in live electronic music, Davies was asked to join Gentle Fire in November 1968. Through Davies, Gentle Fire developed a close connection to Stockhausen. Gentle Fire gave a total of 245 performances of 100 works by 28 composers, among which Stockhausen was the most frequent choice[47]. Gentle Fire realised several of the text pieces from *Aus den sieben Tagen* and performed and recorded, among others, *Kurzwellen* in 1969. In 1970 they recorded 'Treffpunkt' with Bernas on hand drums, Davies on specially amplified Springboard (see chapter 5), Hearn on electric guitar, Jones on trumpet, Orton on the electronic music synthesizer VCS-3, and Robinson on cello. Gentle Fire often gave first performances of Stockhausen's works such as the verbal score *Annherung* in 1970, and *Spektren* from *Für kommende Zeiten* (1968-1970) in 1972. British premieres of Stockhausen's works included *Kurzwellen* and the text scores *Oben und Unten*, *Richtigen Dauern*, and *Setz die Segel zur Sonne* all from *Aus den sieben Tagen*. In 1972 Gentle Fire gave a performance of some other of the text-scores from *Aus den sieben Tagen* such as *Intesität* and *Aufwärts* for a WDR broadcast. *Aufwärts* was also performed by Gentle Fire (but without Jones) in 1971 for a Radio Blackburn broadcast recording. Gentle Fire also performed *Alphabet für Liège* (1972) on occasion of the 'Journée Karlheinz Stockhausen' on 23 September 1972 held during the Nuits de Septembre festival in the city of Liège in Belgium. Furthermore Jones gave a performance of *Spektren* playing only the trumpet with a specially devised acoustic resonance set-up, while Robinson played electric cello with the London Sinfonietta at Queen Elizabeth Hall on 9 March 1973 for a

programme that included *Kreuzspiel* (1951), *Zeitmasze* (1955-56), *Stop* (1965), *Kontra-punkte* (1952-53), *Adieu* (1966), and *Ylem* (1972). Gentle Fire also participated in several of the performances given by Stockhausen of *Sternklang* (1971) between 1971 and 1975. They participated in its première as one of the five groups performing at the Englischer Garten of the Tiergarten in Berlin on the evening of 5 June 1971. The ensemble also participated in other performances of this piece including a performance on 8 September 1972 in the Parc Delgosha in Shiraz in Iran, given as part of the Shiraz Arts Festival. Gentle Fire were group IV on both these occasions. In the piece Jones played trumpet, Davies clarinet, Hearn electric organ, and Robinson cello. Each of these members also played synthesizer, while Bernas played percussion. Gentle Fire also participated in the recording of the piece in June 1975 in Paris and published by Deutsche Grammophon in 1976. *Sternklang* was also the cause of a reunion of the group in occasion of a performance given at Rheinauenpark, Bonn on 26-27 July 1980. On that occasion Davies played the A clarinet and a self-made contact microphone with pre-amplifier.

3.2.2. Stockhausen's intuitive music.

Gentle Fire's choice of pieces from Stockhausen's repertoire focussed on his electronic or experimental works, reflecting the interest of the members of the group. In particular they favoured the text pieces from *Aus den sieben Tagen*, since they allowed performers greater freedom in their realisation. As the instrumentation was left unspecified in these scores, Davies was able to include his invented instruments in his performances. According to Tim Souster these text pieces broke with the European avant-garde tradition of post-Webernian stamp (as developed in Boulez's work) mediating between metaphysical aspirations and practical musicianship, and between score and realisation[48].

According to Souster *Aus den sieben Tagen* was reminiscent of works by Christian Wolff and La Monte Young (1935-), and showed the interest that the German composer had developed in mysticism and improvisation in the late 1960s. In fact, Stockhausen had devised a personal interpretation of improvisation called 'intuitive music'. This concept formed the basis of the collection of the short text instructions that made up *Aus den sieben Tagen* and *Für kommende Zeiten*. The text-scores pointed more to a procedure to follow rather than indicating the music that was expected from the performers, confirming the importance that Stockhausen placed on the 'how' in validating the 'what'. Such methodology gave rise to different structural forms that the musicologist Carl Bergstrøm-Nielsen divided into four categories: fixing, circumscribing, suggesting, and evoking[49]. According to this system texts of the first category gave specific verbal instructions as to which sound to produce. For instance, in *Übereinstimmung* (part of *Für kommende Zeiten*), instructions regarding the music dynamics were clear, indicating whether to play or sing loud or quiet, this instruction was tantamount to 'fixing' the material. In the 'circumscribing' category, on the other hand, the emphasis was on relating to other musicians, and the act of circumscribing could have taken place metaphorically or explicitly. For instance, in a score like *Zugvogel* (*Für kommende Zeiten*), the instructions were to 'play in parallel', while in 'Setz die Segel zur Sonne' they were about moving one's own tone to achieve harmony with the other musicians' tone. In the 'suggestion' scores the musicians were required to interpret instructions that referred to elements beyond common sense. For instance, in *Abwärts* (*Aus den sieben Tagen*) the score instructed the musician to play a note in the rhythm of the performer's molecules and atoms. In *Verbindung* (*Aus den sieben Tagen*) the rhythm was to be that of the musician's thinking, or the universe. Finally, in the 'evoking' category, the performers were required to reach a particular stage in their consciousness in order to be able to execute the instructions. Thus, in *Goldstaub* (*Aus den sieben Tagen*) the

performer was instructed to live in isolation for four days, while fasting, with limited sleep and in silence before executing single sounds; the meditative state induced by such practice was necessary to validate the sounds produced. Bergstrøm-Nielsen's categories are useful in that they clarify the nature of Stockhausen's intuitive music as a guided improvisatory form. The text scores gave musical directions to the performers, which required interpretation, and were far from establishing a *laissez-faire* policy. On the other hand, whilst Stockhausen's texts presented several prescriptions on how to play the music, they did not specify exactly what sound to produce, but rather the interpreter was expected to intuit the meaning of the directions given. The instrumentation was left indeterminate and the musical structure rested on subjective, contingent, or often irrational elements. For instance, in *Verbindung* specific rhythm and tempo suggestions were scored by referencing '...the rhythm of your heart', '...your breathing', and '...your thinking'[50]. 'Treffpunkt' featured a structure based on a rondo-like form in which each player had to return at different (unspecified) times to the sound played at the beginning. *Richtige Dauern* required concentration on finding the appropriate duration for each sound that one played. In *Setz die Segel zur Sonne* the text read: 'listen to the tones of others...and slowly move your tone until you arrive at complete harmony and the whole sound turns to gold...'[51]. Noticeable freedom was thus also granted to the performers, who took on a role of contributors as well as interpreters of these pieces.

3.2.3. Assessment of intuitive music by Gentle Fire.

The performance of Stockhausen's intuitive music was crucial in the development of Gentle Fire's work. For instance, *Spektren* was one of the text-scores most frequently performed by them. Gentle Fire gave its UK première at Glasgow University, which

was broadcast by the BBC Radio 3 on 12 October 1976. In a note about this work Stockhausen said:

'As the title indicates almost all sound is made out of particles of sound like light spectra. During the interpretation each musician should listen to the sound of the others and try to split it into its component parts. Then, as the second instruction of the score indicates, these divided sounds should be reunited. These processes can then be alternated at will. There are also sounds, which cannot be consciously divided, which are so finely blended they seem indissoluble. These sounds should be introduced gradually into the visible sounds'[52].

In this score Stockhausen placed the responsibility of interpretation on the performers, but also established firm boundaries. In the text he envisaged two strategies to guide the players: division of the sound heard into its components, and unification of these towards the original sound. In this way a certain circular pattern of analysis and synthesis was suggested. Similarly the score of *Intensität* read: 'play single sounds with such dedication until you feel the warmth that radiates from you. Play on and sustain it as long as you can'[53]. During a BBC broadcast of the piece Davies offered his views on this piece from the point of view of the performer, saying:

'Looking at the elements of this text that relate to musical structures and procedures at the beginning it says "play single sounds". A player may choose for each sound to play a texture more complex than a single pitch, which may in some cases become almost a phrase. The continuation of which, "with such dedication that you feel the warmth radiate from you", implies the development of this basic element including the probability that the performers will introduce new elements from time to time, but always with the tendency towards increasing the intensity of their playing and the involvement with the production of each sound. Finally, "play on as long as you can", gives an indication of the way the performance ends which is likely to be either an abrupt halt by the whole ensemble while at full strength, or a fairly rapid fading away as the musicians end one after another. No direct coordination between the players is mentioned. Other works in *Aus den Sieben Tagen* concentrate on other aspects of musical structure. The fact that all the players are following the same instructions independently of each other but always in parallel gives a musical result that is far removed from the structures and relationships that arise in unpremeditated improvisation. In Stockhausen's intuitive music, as well as in text scores by other composers, what is gained from the point of view of the performer is the freedom to play the next sound or the next group of sounds when one is really ready to do so. To select it on the basis of the context of what one has just played – or what the other musicians are playing, instead of counting silences, playing complex rhythmic values, follow the conductor's beat – in addition to playing the notes written down by the composer. In 'Intensität', one is still conscious of playing a definite composition, but the nature of the piece is

such that one only need think the text over quietly to oneself before starting to play, and then everything else happens intuitively; one need not be fully conscious what one is playing, one becomes the music'[54].

I will return to the concept of 'becoming the music' more specifically later, when discussing Cardew's work. For now, and more generally, it is evident from these scores that Stockhausen placed great emphasis on collective forms of composition. Indeed performers were often asked to listen to each other and interact through sound. The establishment of such a collaboratory form of composition might have stemmed from the collective performance projects that took place after Stockhausen's composition classes at Darmstadt in 1967 and 1968, *Ensemble* and *Musik für ein Haus*, in which students participated. This form of collective composition was also an essential characteristic of Gentle Fire's own work. In fact, the mediation between score and realisation that Souster identified in these pieces and the mediation between a fixed and improvised performance, underlined by Bergstrøm-Nielsen's categories, would be further developed by Gentle Fire's 'group compositions'.

3.2.4. Gentle Fire's group compositions.

As mentioned in the previous section, one of the distinguishing characteristics of Gentle Fire was their collective form of composition. This practice evolved after the group had performed several improvisations in public and private concerts. Davies had had experience in improvisation with his participation in the Music Improvisation Company (henceforth MIC) and Naked Software. These ensembles had offered Davies a substantial experience in this medium. MIC was a free jazz group, which focussed on restricting structural and musical material in favour of a unity in the interaction of the players, while Naked Software featured non-musicians among its ranks; for instance, one of its members, John Lifton (1944-), was an architect. Therefore Naked Software

was characterised by a looser exploration of new sound possibilities. Although Gentle Fire occasionally performed improvisations they were dissatisfied with the challenges that this activity posed[55], and from 1969 onwards the group started focussing on composed collective work. Robinson stated that this form of composition developed from 'the idea of making situations which select sound from the entire possible range without employing conscious decision before or during the performance'[56]**.** Nonetheless improvisation could have been a more immediate way to achieve this aim, as it by-passed the process of consciously devising the score, thus reaching the informality that Cardew would particularly appreciate in the work of AMM, as discussed later. On the other hand it could be argued that a score ensured that the performers did not revert to traditional, habitual patterns of music making. A score served the purpose of guiding the music towards new possibilities. This aim was also behind Cage's indeterminate scores and indeed Stockhausen's intuitive music. In fact, it was after the experience of realising a score by Stockhausen (probably *Kurzwellen*) at the Harrogate Festival of 1969 that Gentle Fire adopted forms of composed music. This, however, was far from being a fully notated score, and still relied largely on improvisation.

Gentle Fire realised six collectively composed pieces between 1970 and 1973, and a seventh was planned when the group disbanded. These pieces were called 'group compositions' and given a Roman numeral to distinguish them. The Roman numeral indicated the essentially improvised nature of these works, which did not follow a theme but rather were discursive musical realisations that depended on their context. With these compositions Gentle Fire further explored live processing of sound, invented instrumentation, and a cyclical structure in the devising of a score. The first collective composition by Gentle Fire was performed on the occasion of the Harrogate Festival in 1970. Robinson claimed that *Group Composition* II and V dealt with the

dialectics of constraint and freedom, determinacy and aleatorism[57]. *Group Composition III* and *IV* concentrated on realising and extending the sound potentialities of a single instrument, while *Group Composition I* and *VI* consisted of a particular set-up of the electronic equipment[58]. All of these works required live electronics as a significant part of their execution. In *Group Composition I* the treatments were made primarily with two VCS-3 synthesizers, whose patches were scored. *Group Composition II* and *Group Composition* V (which differed only slightly, and because of the different number of performers involved) featured filtering and ring-modulation, as well as the use of tape loops. *Group Composition III* and *IV* shared the same instrument, the gHong, invented by Robinson. This instrument had four sides, each of which was connected to two microphones: a high quality type, such as a stethoscope or transducer, and a microphone with a reduced frequency response, which was used for filtering purposes. The invention of this instrument is significant in understanding the favourable environment created by text and graphic scores in exploring new possibilities in sound. Indeed the gHong originally meant to satisfy the score instructions of Christian Wolff's *For Jill* (1970) a piece that Gentle Fire recorded in London on the 20 May 1970. The score instructions read:

> 'Construct an instrument, or find something, or use an instrument as part of a construction which can make 5 different pitches, or 11 or 3 different pitches; 6 different qualities of sound (they can be made to depend on the manner of performance), or 2; and which can sustain sounds at least somewhat before they begin to fade'[59].

As specified by these instructions Robinson had found the instrument in his garden[60]. The instrument was originally a sculpture that Robinson's neighbour had created, resembling an oven grill; it was made of metal, and measuring about five feet by three feet. After testing it with a microphone – rather like Stockhausen had done with the tam tam for *Mikrophonie I* – Robinson found out that this sculpture had notable sounding capabilities. He thus decided to further develop the instrument, by having two more

grill-like sculptures added to the first. These three grills were joined to form three sides of a cube, with a group of force springs hanging on the remaining fourth side. This structure was then put on a purposely-built stand. The use of microphones was crucial in the playing of the gHong. Indeed according to Davies the different microphones allowed for an extension of the sounds produced by the instrument, bringing an indeterminate quality to the results[61]. In *Group Composition III* the gHong was the sole sound source, while in *Group Composition IV* each member had also another instrument to play, alternating between this and the gHong. The traditional instruments could be made to resemble the sound of the gHong, and thus developed a dialogue between the new and traditional soundworld. Bernas went as far as claiming that the gHong was the score of the performance[62]. He did not further explain how this instrument could be used as such, but claimed that when playing the gHong 'our movements are circumscribed but they are not predictable'[63], which seems to suggest a similarity between such an instrument and an indeterminate score, like one of Stockhausen's intuitive music texts belonging to Bergstrøm-Nielsen's 'circumscribing' category.

Microphones were also fundamental for the realisation of *Group Composition VI*, which was based on a sound-processing system to modify speech. In this piece the slightly altered magnetic pickups with diaphragms that were found in telephone handsets were used, in the same manner that Davies would also employ them in his piece *Music for Bowed Diaphragms* (1973), discussed in chapter 6. In these pieces the diaphragms were partly removed from their centred position to allow for interference between the vibrating diaphragm and the microphone, resulting in sound filtering. By substituting this set-up for the mouthpiece of a telephone handset, the voices were thus modified. The speech was further altered by the use of a single horsehair 'bow' to sound the diaphragm and by operating the two dials. Live processing of sound was thus one of the

main concerns of Gentle Fire, as well as developing collective forms of compositions. For instance each member of Gentle Fire composed a part of the score of *Group Composition II* and *V* for another member. Thus Hearn wrote a part for Davies, Davies for Robinson, etc. The scores realised for this piece were varied. For instance Hearn had devised an indeterminate score, which consisted of dice-like pentagons and tape loops that corresponded to each of the members whose sound Davies would accordingly process (see figure 9). Davies's instructions for Robinson's cello part incorporated material from *A Two-Guinea Ode for the Gentle Fire* by John Furnival (1933-), a work commissioned by Gentle Fire[64]. In Davies's version of this score (see figure 8) for *Group Composition II* and *V* the text read:

'This part combines dependent and independent elements. It consists of a single sheet of paper, approx. 16 ½ per 12 inches, together with these instructions (2 pages). The player interprets the various dependent notations in the outer score, in other words in the outside graph paper margin of 1 ¾ - 2 ½ inches width. He begins his performance wherever he chooses in the outer score, but must then continue to read the score as a continuity, following the margin either in a clockwise or anti-clockwise direction. He finishes when he has reached the point where he started, after interpreting his first notation in a completely different way, unless a prearranged cue to end has been agreed on (e.g. a precise timing for the performance). The durations of the notations are free, provided that a continuum of durations from very short to very long is achieved in the course of the performance. Occasionally a notation may be omitted (assigned a duration of 0'00") if the performer for any reason does not wish to interpret it. All notations in the outer score are dependent and are to be related to one or more (or all) of the other players (actions and/or sounds), or to what the player has himself just played, and these relationships are to be similarly varied (supporting, contrasting, destroying, etc.). The notations may be freely applied to any one or more than one parameter, when no specific indications are given. A notation may, if the player wishes, continue to be effective during the interpretation of the next one or two notations. Specific indications (e.g. pizz., +/-/=, etc.) may occur in passages other than where they are notated, but should be less prominent. At seven points, irregularly spaced throughout the performance and of different durations, the player transfers to the inner score, which consists of a sheet of paper approx. 11 per 7 ½ inches glued in the centre of the graph paper. During these independent elements, the player may if he wishes disregard what the other musicians are doing - or their transformations of his own sound, if his sounds are processed electronically by another performer(s). Unlike the outer score, each time that the player uses the inner score he may select any of the material notated on this part of the score, provided that he uses at least ¾ of it in the course of a performance, and that whenever he returns to a part of the material that he has already used he interprets it in a different way from the previous occasion (e.g. first the overall outlines, then the internal markings). As in the outer score, the notations

may be freely applied to anyone or more than one parameter. The fragments of a contact microphone that are glued onto the paper should, however, be interpreted as timbre indications, i.e. distortions of the sound in ways equivalent to electronic transformation processes. The player should not necessarily proceed from the outer score to the nearest notation in the inner score, but should freely select whatever material he wishes. The relative proportions of the sound and silence are to be decided by the player with regard to the overall atmosphere of the group composition and the proportion of activity contributed by the other performers"[65].

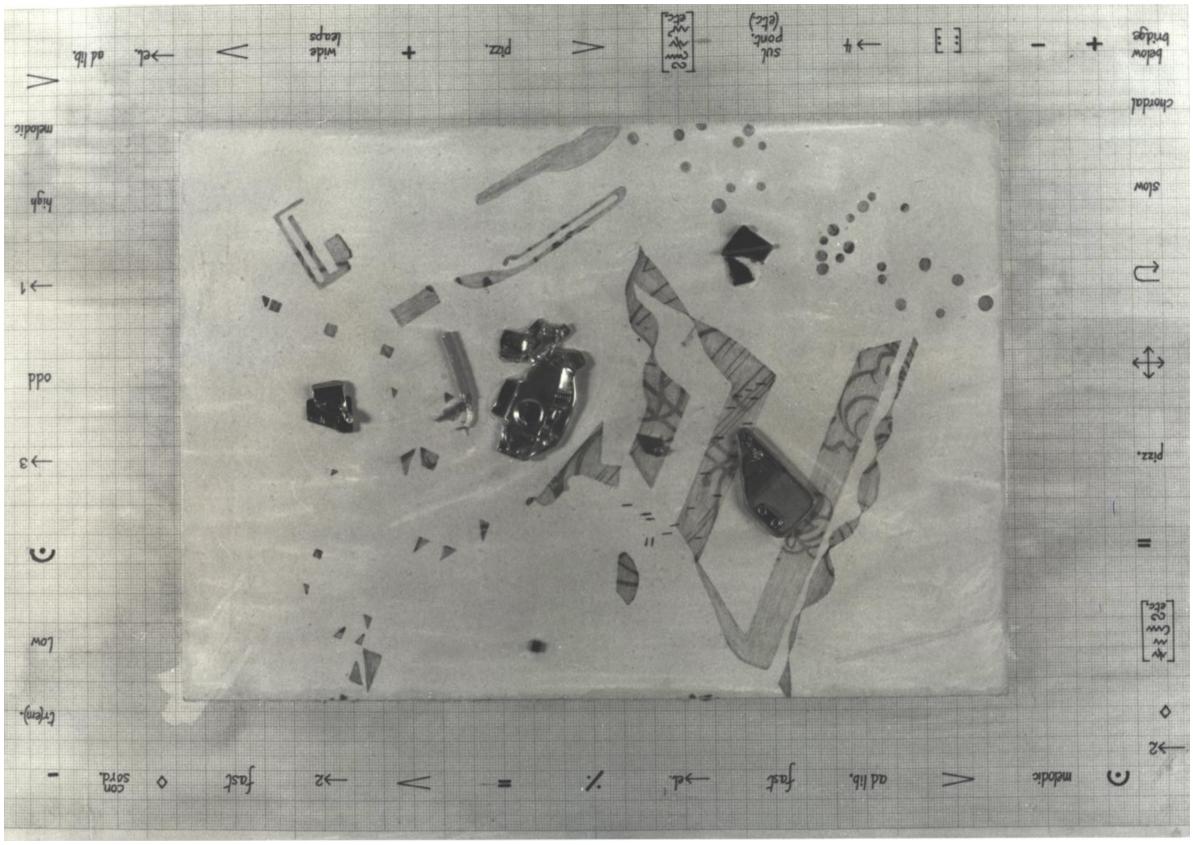


Figure 3. Davies's score for *Group Composition II* and *V*, (photograph: Michael Dunne, HDA).



Figure 4. Graham Hearne's score for *Group Composition II* and *V*, (photograph: my own).

In this score Davies further established the importance of relating to other players and interacting with them, either supporting the overall atmosphere or deliberately going against it. Davies also gave evidence of how objects could be interpreted as a score by claiming that the microphone fragments glued on the score sheet were 'timbre indications'. Furthermore, although Davies's text is considerably less esoteric than Stockhausen's intuitive music scores, it seeks to determine similar structures for its execution. Indeed this text could be included in Bergstrøm-Nielsen's fixing and circumscribing categories. In addition, the cyclical structure of the score can be compared to Stockhausen's *Zyklus* (1959) and Cardew's *February Piece 1959* (1959-61), discussed later in the chapter. Nonetheless Davies's score was only part of the entire composition, rather than its overarching principle since in a collective composition each member had equal standing in contributing to the final result. In fact, Robinson commented how in *Group Composition II* and *IV*, as in general with the group compositions, the individual contributions of each member converged to create a piece of music that was different from their individual work, thus achieving a result that was more than the sum of its parts[66]. Robinson said:

> 'I think it comes from the fact that each of the pieces has one area of the whole sound possibility very, very tightly and completely defined and that definition makes the sort of environment in which the musician just comes in and allows the environment to sound. I think all of [the group compositions]…are in this way…I think that all of them have made an environment in which our own group musical personality has a chance to resonate which is impossible for any one of us to do in a piece, it makes something resonate which a single piece or an improvisation or anything like that…never really seemed to be able to do'[67].

The instrument used, such as the gHong, significantly contributed to the creation of this tight environment, by restricting the possibilities available to the performers and creating a sense of unity in the overall result. Thus, if the instrument were the score, then the performers could be considered the instrument, while the environment the real player. In this configuration the performers are means by which the surrounding

environment can find an aural realisation within the possibilities allowed by the instrument-score. The importance that the environment played in the music making process was also acknowledged by Cardew in the theorising of his improvisations with AMM (see discussion later in this chapter). The environment as a producer of sounds was also a concept explored in sound sculpture and site-specific installations that used natural elements for the triggering of sounds (see chapter 5). Furthermore, the notion of 'environment' necessarily involves people, as inhabitants and shapers of the environment, not only materially, but also in its organisation and interpretation. This understanding of an environment suggests a social and political dimension to the group compositions. This dimension could have pertained to the way in which the members of the ensemble worked together, or the relationship established with the audience. Indeed, Davies drew a parallel between Gentle Fire's manner of collective composition and similar practices in China. He said:

> 'A number of musicians each contribute to the piece which is then rehearsed and then made available to the public for a period of several months in which they can criticise this and make any comments and then finally the piece is put together over a period of another six months and this seems to be a group composition of a national scale which is very, very astonishing – typical of the way China is going at the moment. In the same way our group compositions are an attempt to find something that is entirely relevant to us that expresses the way we work in music and we sort of unconsciously gravitated towards doing that'[68].

3.2.5. Davies's compositions for Gentle Fire.

Beside the group compositions, each member of Gentle Fire also contributed pieces composed individually. For instance, Davies composed *Gentle Springs* (1972), *Commentary* (1969-70), and *Quintet* (1967-8) for the group.

Gentle Springs was a piece for small ensemble (4-5 players) in which the sound sources were springs (hence the title). The instrumentation for the piece featured the

Springboards, a family of instruments that Davies had devised using exclusively springs and which will be discussed in the next chapter. Davies's recommendations on the score were to choose freely among this family of instruments, avoiding selecting those that were too closely related[69]. The instructions to the players were to explore 'the musical "personality" of the Springboard'[70], a process that according to Davies was best pursued by the players separately from each other, until the final rehearsal stages. In the score for this piece, Davies drew a parallel between the personalities and interactions of the musical instruments and that of the performers, confirming a socially based understanding of his work in the field[71]. In this piece predetermined or, as Robinson called them, 'conscious' structures were to be avoided – a reminder that this was an experimental music piece, underpinned by a spirit of research which tried to do away with memory, psychology, and taste. Davies's instructions could be considered to belong to the 'circumscribing' category of Bergstrøm-Nielsen's system, but the score also presented prescriptions that might more appropriately fall within the 'fixing' category. Davies envisaged the results as 'fairly sparse, with clear textures, rarely more than three players at any one time (very effective are pianissimo sounds that are masked by other players until sudden "windows" occur)'[72]. In addition, Davies included two texts, which were to offer musical inspiration during the performance (an 'evoking'-type strategy). The first 'Upon a bank with roses set about' was an eclogue by the English poet Michael Drayton (1563-1631) composed in 1600 and revised 1606, which was set as a madrigal by the English composer John Ward (1571-1638). The second, 'Flow not so fast ye fountaines', was set as a song by the English composer John Dowland (1563-1626) in 1603. Each of these texts was a 'found score', a term that referred to scores created from any object (for instance a photograph) that were not originally meant to serve as a musical score. Both texts mentioned 'gentle springs', albeit intending them in different meanings. They read:

'Upon a bank with roses set about,/Where pretty turtles, joining bill to bill,/And gentle springs steal softly murmuring out,/Washing the foot of pleasure's sacred hill;/There little Love sore wounded lies,/His bow and arrows broken,/Bedewed with tears from Venus' eyes;/O grievous to be spoken'[73].

'Flow not so fast ye fountaines,/What needeth all this haste?/Swell not above your mountaines,/Nor spend your time in waste./Gentle springs, freshly your salt teares/Must still fall dropping/From their spheares./Weepe they apace whom Reason,/Or ling'ring Time can ease./My sorrow can no Season,/Nor aught besides appease./Gentle springs (etc.)/Time can abate the terrour/Of every common paine;/But common griefe is errour,/True griefe will still remain./Gentle springs (etc.)'[74].

These poems could be interpreted as belonging to the type of 'evocative' scores; indeed, Drayton's poem evoked musical dynamics by suggesting that the gentle springs 'steal softly murmuring out', an instruction that could be understood to indicate a *piano* or even a *pianissimo* marking, which was indeed confirmed by Davies's idea for the piece. In the Dowland song a sense of rhythm was indicated by the lines 'Gentle springs, freshly your salt teares/Must still fall dropping'; indeed dropping could be taken to indicate a repeated staccato gesture in the playing. Finally, both texts gave general performance directions by using the word 'gentle', which could be compared to the musical *gracieux* or *affettuoso*, thus setting clear boundaries in terms of tempo and expressive range. The choice of texts also highlighted the significant role that the concept of 'nature' played in Davies's work, a role that acquired greater importance in his environmental projects discussed in chapter 6; here it suffices to say that Davies saw no contradiction in juxtaposing the image and sound of a water well and that of a metal coil.

Commentary (1969) was devised by Davies as a companion piece to another performance of choice from his repertoire, or to any other piece by another composer. If this piece was performed along with another composer's piece the resultant work's title should have been followed by the dictum 'with commentary by Hugh Davies'. *Commentary* was written for two live electronic performance instruments and four loudspeakers, or any

composition for two similar stereophonic or one 4-channel live electronic instrument, with four loudspeaker channels and two performers. The score instructions read:

'Two musicians perform on live electronic instruments (e.g. electronic music synthesizers, Shozyg I and II, or Lazy Garlic - Shozyg IV by Hugh Davies and John Furnival), facing each other across a table in the centre of the hall (with the audience seating in a "boxing ring" arrangement). The 2 loudspeakers for each musician are the ones that he can see on each side of the other player. Behind each loudspeaker stands a performer. The loudspeakers are to be placed on small tables or plinths (2 – 3 inches high, but depending on the height of the loudspeakers and the performers) so that the performers' heads are not visible to the audience when they are standing outright. The performers should preferably be musicians with some acting experience, rather than musical actors. Each performer has approximately 12 objects for his activities, which must include at least one hat and one pair of gloves (no two hats or pairs of gloves used in a performance are to be similar, ideally as different as possible e.g. exotic items for each sex's apparel, monstrous rubber hands, etc.). These can be supplemented by recognisable finger and hand gesture (e.g. forming the shape of a pistol, as in children's games). The performers are to react (silently) to the sounds in their own loudspeakers, mimicking, developing, counterpointing, contradicting and sometimes indicating new sounds or articulations (such as by holding up a saw). Only the 2 hands and arms of the performers are to be visible to the audience--their legs must also be screened from view. The overall effect should be one of members of the audience gradually noticing something strange taking place behind the loudspeaker that each person can see best, and then realising that activities are going on behind the other 3 loudspeakers as well. For this reasons the loudspeaker actions should be brief (though this depends somewhat on what is played by the 2 musicians), economical, and not too often amusing, with many, often long, pauses separating them. The performance should, in particular, start with a very gradual and undemonstrative introduction of actions, beginning 2-3 minutes after the musicians have started to play, and taking a couple of minutes before the majority of the audience realises what is happening. Suggested duration for the whole performance is 10-15 minutes. No hint of the dramatic aspect should be given before the performance starts, either by the 4 performers making a formal entrance (they could perhaps go over to their own loudspeakers, but not all simultaneously, in a fairly casual manner and appear to be busy behind them checking the cable connections, followed very quickly by the entrance of the 2 musicians, to distract the attention of the audience; all props should thus have been placed behind the loudspeakers in advance) or by mention of this in the programme in any way (see the note above regarding the title under which the performance is to be given). The names of the four performers could be listed without specifying their role in the performance, e.g.:

A. A. (Shozyg I)

B. B. (Shozyg II)

W. W., X.X. Y.Y., Z.Z.'[75]

This piece developed further the gestural and theatrical aspect of a live electronic music performance. This strategy may have been pursued to obviate the small, imperceptible

gestures that the players would have made on their amplified instruments. Indeed, a disadvantage of electronic amplification was that the gestural vocabulary available to a performer would have been limited. In fact only small gestures were necessary to generate very loud sounds. Later Davies sought to bridge this gap by filming his performance-table with a camera and project the video to the audience. However, in 1969 this option was not readily available, thus developing a *mise-en-scène* could be seen as an attempt at achieving a more visually engaging live performance of electronic music[76].

The piece that most specifically revealed the importance that the microphone had acquired in Davies's work – to the point of elevating its role to that of a musical instrument – was another piece written by Davies for Gentle Fire, *Quintet*. This was originally titled *Astrabal…*[77] in an apparent permutation of the letters composing the name of the Arts Laboratory Ensemble (Arts Lab), with which Davies first performed the piece. The piece was composed between 1967 and 1968 for five performers, five microphones, one sine/square-wave generator, 4-channel switching unit, potentiometers, and six loudspeakers (see appendix). Gentle Fire performed and recorded this piece for a radio broadcast in 1969[78]. This piece was performed again, 43 years later, during the *SHO-ZYG* exhibition on the evening of Wednesday 26 September 2012 by a group of Goldsmiths College students led by Tom Mudd. All the sounds in this piece were to be produced by acoustic feedback, with the exception of a two-minutes section when the sine and square-wave generator was used to produce a spontaneous frequency modulation of the feedback. Davies envisaged a very brief time to prepare this piece, with only one rehearsal considered necessary. He also specified that the players did not need to have any musical training[79]. On the other hand, the capabilities of the equipment were of the utmost importance. These required amplifiers

powerful enough to produce feedback at low levels of amplification without overloading the loudspeakers, with the level of feedback never becoming painful. Indeed the piece had a very specific set up, with each musician standing at a corner of an imaginary square facing a loudspeaker and holding a microphone against it, as well as a potentiometer to control the input level (see appendix 1, figures 64, 65). In the instrumentation, and in the concept of this piece, the influence of Stockhausen's *Mikrophonie I* was apparent. The fifth performer, who also had the oscillator, stood in the middle of the square. A switching unit was also to be used in the penultimate section so that the connection between microphone and loudspeaker could be varied. The performance of *Quintet* possessed a very effective gestural language because of the large movements that the performers had to often execute with the microphones. The piece also marked the continuing interest that Davies had in the spatialisation of sound that he had developed since his *Metamorphosis* piece at Oxford. However, and significantly, the instruments in *Quintet* had now been replaced with a piece of electronic technology, which satisfied his search for the establishment of a live experimental music practice. Electronic technology also opened up the doors of music performance to non-professional musicians, a recurrent fundamental political aspect of Davies's later works, as discussed later.

3.2.6. A typical concert by Gentle Fire.

A typical concert by Gentle Fire could be the one given on Monday 1 February 1971 at 7.45 pm at the Queen Elizabeth Hall. On that occasion Gentle Fire first played *Material* (1964) by Cardew. This piece was a transcription of the composer's *Third Orchestra Piece 1960* (1960) and was written for any ensemble of harmony instruments (supposedly instruments that could perform harmonic textures). It could have been played for an

unlimited length of time, with all the players starting on the same section, but progressing through each of the sections individually, in any way. The Cardew piece was followed by the premiere of *Group Composition II*; also in the programme were *Cartridge Music* and *Solo for Voice II* by Cage. Finally, Gentle Fire performed *Treffpunkt* by Stockhausen, a text-score belonging to the 'circumscribing' category. The meeting point suggested by the score was an initial sound to which the players referred after each excursion. The score in fact read 'Everyone plays the same tone, lead the tone wherever your thoughts lead you, do not leave it, stay with it, always return, to the same place'[80].

The programme clearly established Stockhausen and Cage as the musical points of reference of the ensemble. It also clearly drew a continuity with their work and a common aesthetic pursuit, which I suggest is the experimental music research into sound.

3.3. Intermodulation, AMM, and Cardew.

The members of Gentle Fire were not alone in the pursuit of new sonorities through the use of electronic technology with a particular focus on live performance, towards the end of the 1960s several other such groups were formed. These groups confirmed an interest in overcoming the established boundaries of musical performance and the identities of composer and performer. Examples of such groups were the Theatre of Eternal Music, the Sonic Arts Union, and the New Phonic Art. The Theatre of Eternal Music, founded by La Monte Young in 1964 and still performing to this day, specialised in sustained sounds and extreme dynamics. The Sonic Art Union was active between 1966 and 1976, and featured in its ranks Gordon Mumma, Robert Ashley (1930-), David Behrman (1937-), and Alvin Lucier (1931-); the group focussed especially on live

electronics. The New Phonic Art was founded by Vinko Globokar (1934-) and was active between 1967 and 1976. Globokar played alongside Stockhausen in several of the compositions from *Aus den sieben Tagen*, participating in the recording sessions of these pieces in 1969. In Italy ensembles such as the Gruppo di Improvvisazione di Nuova Consonanza (henceforth GINC) and Musica Elettronica Viva (henceforth MEV) emerged, developing with an emphasis on improvisatory techniques and an overtly political stance. GINC was founded in 1964 by the composer Franco Evangelisti (1926-1980) and remained active until 1980. Evangelisti had embraced improvisation because he believed the act of composition to be a contrivance, thus preferring a form of music making that he felt to be more grounded in a sense of social relation[81]. MEV was founded in 1966 by Frederic Rzewski (1938-), and is still active today. Like Gentle Fire, MEV included Cage's *Solo for Voice II* in their repertoire and their performances also featured amplified objects. In Britain two ensembles in particular shared Gentle Fire's and Davies's interest in live electronic music and improvisatory forms: Intermodulation and AMM.

3.3.1. Intermodulation.

The members of Intermodulation were Roger Smalley who played keyboards, Tim Souster at the viola, Robin Thompson[82] on bassoon and other reeds, and Peter Britton[83] – who replaced Andrew Powell[84] in 1970 on percussions. Each member of Intermodulation also played a VCS-3 (Putney) synthesizer for the real time manipulation of sounds. The ensemble gave their first concert in 1970, and their last in 1975[85]. Smalley and Souster had formed Intermodulation while at Cambridge in 1969. Smalley was artist-in-residence at King's College in 1968, while Souster was composer-in-residence at King's College between 1969 and 1971. Smalley studied at the Royal

College of Music in the class of 1961. He attended Stockhausen's New Music course in Cologne in 1965-66 and Boulez's Darmstadt summer course in 1966. Souster attended Stockhausen's courses at the Darmstadt summer school in 1964 and in 1965. While at Oxford (where he obtained his degree in 1964 as Davies did), he studied with the composer and pianist Richard Rodney Bennett (1936-2012)[86]. In 1971, Souster became Stockhausen's teaching assistant in Cologne at the Hochschule für Musik, a position he kept until 1973. Intermodulation, like Gentle Fire, also enjoyed a strong connection to Stockhausen in virtue of the work that Smalley and Souster had done with the German composer. They participated, like Gentle Fire, in the performances and recording of Stockhausen's *Sternklang*. Like Gentle Fire, Intermodulation did 'not limit themselves to the execution of other composers' pieces, but featured composers among their members who contributed pieces to their repertoire. The influence of Stockhausen was also evident in the works that each realised outside the group, such as the interpretation of moment-form by Smalley in his *The Song of the Highest Tower* (1967–8). Smalley and Souster also composed for Intermodulation using text scores like Stockhausen's intuitive music pieces. Despite the many similarities between Gentle Fire and Intermodulation, the compositional process that these groups adopted set them apart because of their different methodology. In fact, while both Intermodulation and Gentle Fire performed pieces that individual members of the group had composed, Gentle Fire focussed particularly on collective composition, whereas Intermodulation's involvement with this strategy was less significant.

3.3.2. AMM.

AMM were formed in 1965 by Eddie Prévost (b. 1942), Keith Rowe (b. 1940) and Lou Gare (b. 1939), with Cardew joining the group a year later. AMM are still active at present albeit with different members. Discussing their music, Cardew theorised an 'informal' music that owed to the improvisatory nature of their performances. Cardew claimed:

> "'Informal" sound has a power over our emotional responses that "formal" music does not, in that it acts subliminally rather than on a cultural level. This is a possible definition of the area in which AMM is experimental. We are *searching* [Cardew's emphasis] for sounds and for responses that attach to them, rather than thinking them up, preparing them and producing them. The search is conducted in the medium of sound and the musician himself is at the heart of the experiment'[87].

In this statement Cardew further established the understanding of experimental music as research in sound. Furthermore Cardew also stressed the importance that perception played in these processes (the 'responses that attach to them'), which had also been an important aspect in Schaeffer[88]. Cardew's epiteth 'informal' was the opposite of 'formal' but also the opposite of conscious processes and rationalism. Cardew thus established his aesthetics in binary terms, drawing a distinction between informality and formality, emotional response and thinking, innovation and tradition. In this discourse culture was equated with tradition, and acquired negative connotations. As mentioned in chapter 1, an important aspect of AMM was its members' interpretation of their work from a social and political perspective. Indeed for Cardew a fundamental characteristic of the kind of improvisation produced by AMM was the locus of its realisation (the 'environment' discussed earlier). Improvisation, for Cardew, happened in the public sphere, rather than in the domestic one – possibly because composition was not a process that was conducted in isolation, but as a result of a collective and on-going effort. Improvisation was thus as much a product of the interaction between the players themselves as of the players and the listeners, together with the surrounding space.

Thus, for Cardew, improvisation – as opposed to traditional notated music – depended on time and place in developing its own language and could not be captured in recordings, since the interaction between the elements that gave origin to the music (including the audience and the location) could not be sufficiently represented in a recording[89].

3.3.3. Cornelius Cardew.

Cardew was an important figure in British experimental music of the late 1960s and 1970s. His professional relationship with Stockhausen, his promotion of Cage's brand of experimental music in the UK, and his socio-political understanding of music represented a reflection of the spirit of the time as well as making a great contribution to it. Cardew's career had also many interesting parallels with that of Davies. Both had a classical musical education and worked closely with Stockhausen, being significantly influenced by him. Both pursued idiosyncratic careers that often put them at odds with established norms, even when as loosely formed as those of experimental music. Both demonstrated a concern with matters beyond the musical domain, Cardew striving to realise a music that would fulfil the promise of his political beliefs and Davies embracing an environmental approach to his work (see chapters 5 and 6). However Cardew showed a capacity for reaching greater extremes than Davies, radically rejecting the aesthetics of experimental music. Cardew's work will be further discussed here because of his relevance in experimental music in Britain and for its relationship to Davies's own work.

Cardew had been Stockhausen's assistant just before Davies[90]. He joined Stockhausen after completing his studies in electronic music with Michael Gottfried Koenig (1926-)

in Cologne between 1957 and 1958. The result of these studies were two pieces: *Übung I* and *II*, however Cardew was sceptical of electronic music, or rather electronic equipment, which he believed to be unreliable[91]. In the following two years he was involved with Stockhausen, contributing substantially to the composition of *Carré* (1961), which had been commissioned by Radio Hamburg. Cardew claimed that his role in the writing of the piece was the result of personal and practical reasons[92]. This artistic relationship was initiated by an affinity in the compositional methods employed by both composers. In fact both Cardew and Stockhausen had previously been working at pieces that adopted a cyclic element in their structuring. Cardew had composed *February Piece 1959* for solo piano, part of the *February Pieces* (1959-61), where the performer could have started with any section before returning to the beginning[93], and Stockhausen composed *Zyklus* (1959) for percussionist, where there was no set beginning and no right way up to read the score, thus leaving the performer to play from any point through the work until reaching the original point of departure. Cardew believed that Stockhausen's *Carré* offered an extension of his own work, as the piece was structured in units of music rather than time[94].

Cardew was also deeply influenced by Cage's work. He had met Cage and Tudor at Darmstadt in 1958 while he was working as Stockhausen's assistant. The concert Cage and Tudor gave on that occasion made a great impression on Cardew, as well as on Stockhausen himself. After this encounter, Cardew became an important figure in the promotion of their works in the UK. Cardew not only performed pieces by the New York School, but also adopted their techniques of composition. For instance in January 1960 Cardew organised a concert that included music by Cage, Feldman, Wolff, and himself at the Conway Hall in London[95]. Indeterminacy was at the basis of a series of compositions by Cardew in the early 1960s such as *Autumn 60* (1960), *Memories of You*

(1964), and *Volo Solo* (1965). *Octet '61* (1961) was dedicated to the American Neo-Dadaist painter Jasper Johns (1930-), who was part of Cage's circle. *Octet '61* was an indeterminate piece for any instrument or instruments with a score, which consisted in sixty graphic images.

In 1967, Cardew published *Treatise* (1963-67), which consisted of an amalgam of graphic symbols and geometrical shapes that visually developed over almost three hundred pages. This graphism required a substantial interpretation by the musician to be realised, with no introduction or suggestion on how to read the score given by Cardew. The only apparent hint that *Treatise* was a musical score could be taken from the musical stave that was reproduced at the bottom of every page, which however remained blank throughout (see figure 10). The score did not indicate any instrument, or place any requirement on the capabilities of the performer – thus opening up the possibility for untrained musicians to take active part in this piece's performance. Cardew used graphic notation as a strategy to further inspire new approaches and new sounds to music making. The notation created a framework for the performer to realise a piece, and therefore establish a more collaborative relationship between the composer and the performer. To Cardew such indeterminacy represented a first step towards the search for establishing a more profitable relationship between the composer and the performer – a social purpose that was to characterise with increasing emphasis his own work. Cardew summed up this view by stating 'you are the music'[96], a statement that was similar to Davies's vision of 'becoming the music'. Cardew used this concept to describe the process by which, during improvisation, a performer would *be* a sound rather than simply produce it[97]. The greater freedom allowed by graphic notation, nonetheless, still placed a considerable amount of pressure on the performer who, according to Cardew, had moral and ethical responsibilities towards its realisation[98]. Graphic notation hardly

equated to giving free rein to execute the music. Indeed, Cardew envisaged a certain kind of training that the musician still had to undergo to be able to correctly perform a piece[99].

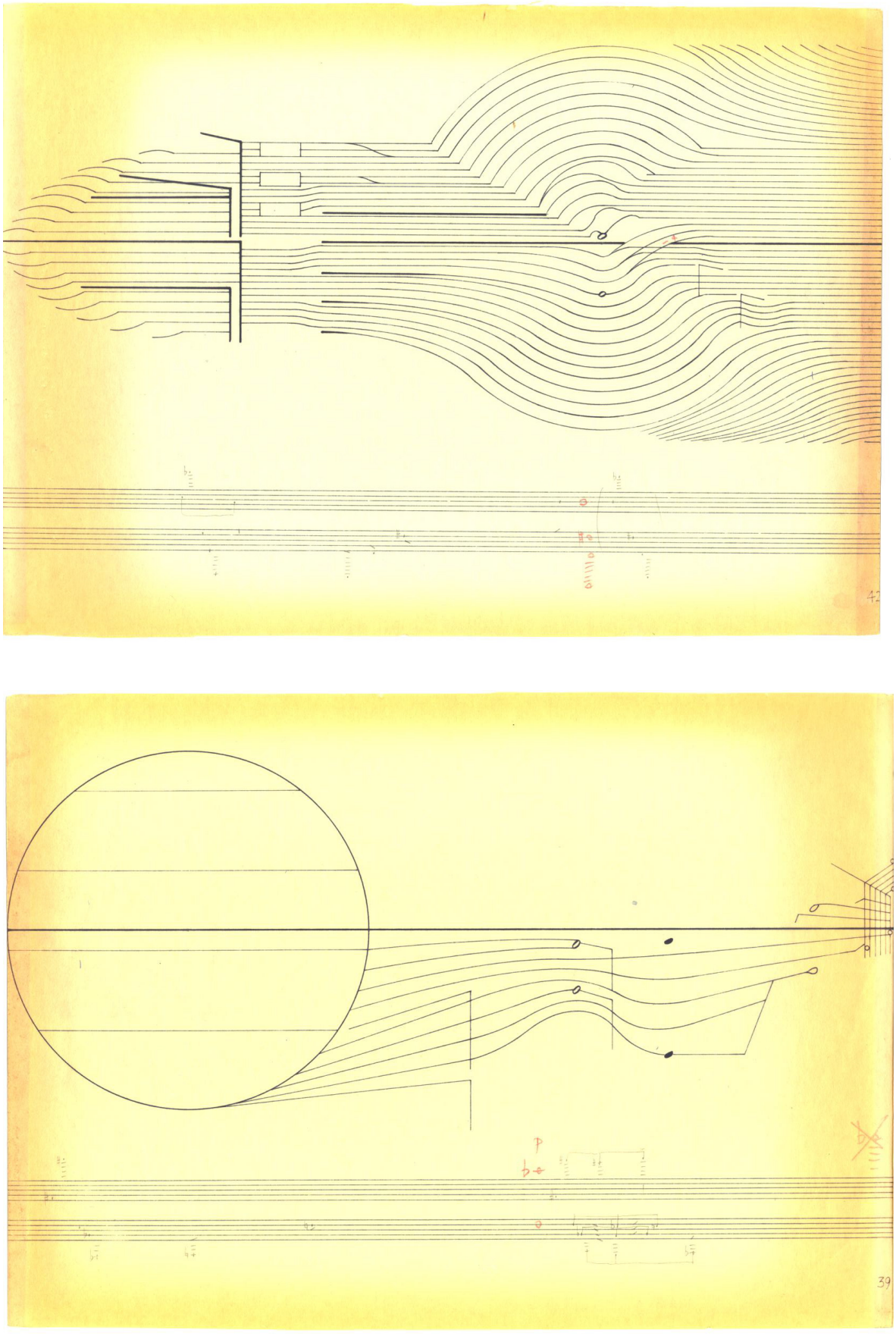


Figure 5. Pages from Cardew's *Treatise*, BL. Annotations by unknown.

3.3.4. The Scratch Orchestra.

Despite the advantages that a visual, unconventional notation offered, Cardew identified certain pitfalls of this method. Cardew suggested that those who were not 'musical innocents' might have still read into the graphic symbols of *Treatise* memories of the musical education they had received[100]. Cage had also described memory and psychology as mechanisms that had to be resisted, since they led to the perpetration of traditional musical (tonal) patterns. Thus, from 1965 after *Treatise*, Cardew focussed on another aspect of the social dimension of music making by practising free improvisation with the group AMM. Choosing improvisation as a way out of the dangers that graphic notation represented was however in contradiction with Cage's general attitude towards improvisation, discussed in chapter 1. However, with the group Cardew aimed at achieving a collaborative form of composition that was similar in intent to Gentle Fire's group compositions. Nonetheless, it was with the establishment of the Scratch Orchestra, between 1969 and 1973, formed by a group of students around a class that Cardew held at Morley College, that Cardew had an opportunity to further develop his interest in the social underpinnings of music. Cardew later developed the logics of social integration inherent in *Treatise* with greater awareness and commitment in the formation of the Scratch Orchestra. The Scratch Orchestra comprised members, the 'Scratchers' whose musical skills varied greatly. The conscious refusal to restrict memberships to professional musicians was a deliberate denouncement of the elitism of the music establishment. The orchestra also released an official constitution declaring the ultra-democratic principles to which the Scratchers would abide. The repertoire of the orchestra varied greatly. Cardew envisaged five categories of works to be performed. Among these Cardew counted improvisation, which was described as a community based on feeling[101]. Cardew also listed compositions that the Orchestra may have

performed, such as Cage's *Variation IV* and Stockhausen's *Aus den sieben Tagen*. Of particular interest was the category of 'Popular Classics', renowned pieces of music such as Beethoven's *Pastoral Symphony* and Mozart's *Eine kleine Nachtmusik*. Scratchers were to perform 'particles' of these works playing 'as best they can, playing along, contributing whatever they can recall of the work in question, filling the gaps of memory with improvised variational material'[102]. The Scratch Orchestra thus represented a further development of the notion of collective and inclusive music making that groups like Gentle Fire, AMM, and Intermodulation were practising. The radical social integration that such a musical project implied had political significance. During the time of the Scratch Orchestra, Cardew developed a strong connection with the Communist Party of England (Marxist-Leninist), eventually joining it officially. In 1970 the People's Liberation Music formed by Cardew and Rowe among others, sought to address political issues through music. These political activities had repercussion on the kind of music that Cardew composed. Cardew came to reject the experimental idiom in favour of popular song, as the latter was deemed a less elitist genre.

3.3.5. Cardew's critique of experimental music.

Embracing historical materialism brought Cardew to repudiate all his previous work as well as the whole avant-garde musical genre. His sentiments towards his musical past and the composers he was associated with were expressed on several occasions. For instance, when asked by Hans Keller from the BBC Music Section to write an introduction for the *Listener* magazine to an upcoming series of concerts of music by Cage, Cardew took it as an opportunity to condemn Cage's lack of support of the social struggle by writing the essay 'Cage: Ghost or monster?'. Cardew also wrote another critical text as an introductory talk to a BBC broadcast of *Refrain* by Stockhausen. These

texts, as well as other writings, were later published in a book in 1974. Inspired by his beliefs in the teachings of Mao Zedong (1893-1976), Cardew believed that composers like Cage and Stockhausen had 'no currency in the working class'[103] and merely perpetrated bourgeois ideology. Whether as a source of inspiration or indignation, Cardew proved once more the importance that figures like Cage and Stockhausen played in British music at the time, and the debt, however onerous it might have felt, that was owed to their work. Cardew's work also made evident the increasing feeling of the necessity of music to serve a social function. In Cardew's writings the notion of music being actively involved in the events that shaped society was apparent. This reflected a wider politicisation of culture in the late 1960s and 1970s. Indeed the cultural revolution, May 1968 in Paris, the fight for the recognition of the civil rights of racial minorities, the second wave of feminism, the Stonewall riot of 1969, the emergence of a counterculture, the Summer of Love of 1967, the Vietnam war, and the development of a 'New Left' of radical intellectuals were some of the events that have been mediated in the music of Cardew, Davies, and AMM among others. I argue that these composers and performers sought a radical transformation of musical practice to accommodate an emerging new world view.

4. Hugh Davies's invented musical instruments.

Inventing new musical instruments was a central activity for Hugh Davies. Davies began his work in this field around 1967 and pursued it throughout his life inventing more than 130 new concert instruments, sound sculptures, and site-specific installations. For him, inventing instruments was liberating, because it allowed him to 'produce a music that already in the creation of its sound begins to realise its implications'[1]. For Davies, inventing an instrument was a fundamental step in establishing a sound repository and a manner in which this could be activated, already implying in its making types of musical language that the instrument was capable of producing. This claim brings further clarity to Robinson's description of an instrument as a musical score (see chapter 4). In this chapter I will discuss Davies's invented instruments in detail, presenting information about their construction and use. I will speak in particular about Shozyg I, which I argue to be Davies's greatest accomplishment. Shozyg I encapsulated Davies's aesthetic aims, as well as his social concerns. It developed Davies's interest in live electronic music but also launched a critique against the increasing standardisation of music technology; it expressed his rejection of the musical past while engendering his research into the universe of sound. It fostered a more informal, improvisatory approach to performance, which allowed for the opening up of music making to non-professional musicians and non-musicians. Shozyg I marked the environmental concern that would characterise Davies's later work (discussed in chapter 6) by giving a radical example of a sustainable way to make musical instruments. Davies built Shozyg I using found materials and discarded objects, which became the template for his work in building instruments, such as with the inventions of the Springboards and the Eggslicer. I will compare such methodology of salvaging material to similar strategies employed in the Fine Arts. Although

incorporating found materials was a rather unorthodox pursuit in the context of traditional musical instrument construction, it was a widespread practice in painting and sculpture since the beginning of the twentieth century. Davies's interdisciplinary approach allows for a fruitful discussion of the Fine Art tradition of the *objet trouvé* and the Fluxus movement in relation to his work.

4.1. New instruments for new music.

4.1.1. Beyond the orchestral soundworld.

The syllabus for the electronic music course that Davies ran at the electronic music studio at Goldsmiths college for the 1970-71 academic year mentioned two outcomes; the first was inventing instruments of any kind, the second was devising an acoustic instrument using given materials, featuring a found or easy-to-use resonator[2]. The conditions to which these inventions had to abide were that they not resemble in looks or performance technique any existing instrument, being specifically unable to play traditional Western art music such as Beethoven's[3]. Davies's own invented instruments also followed these requirements, underpinned by the modernist ethos of searching for the new and rejecting the past. Indeed the research in sound, which was at the basis of experimental electronic music, had been characterised by a radical integration of sources. Schaeffer's work sought to sever the relationship between everyday sounds and their provenance; Cage amplified various mundane objects by inserting them in gramophone cartridges in *Cartridge Music*. Stockhausen used several found items to excite the tam tam in *Mikrophonie I*. Thus research in sound often meant research in new sound sources, and using new sound sources often led to building new musical instruments; Gentle Fire's gHong is an example. New instruments were necessary to

avoid being restricted within the boundaries of traditional Western art music. Davies believed that by just lifting a piano lid, hundreds of years of musical history could be heard[4]. His invented instruments thus represented an attempt to go beyond the boundaries of the Philharmonic soundworld. For Davies, as for Daphne Oram and Gentle Fire, the orchestral soundworld was only one of the possible worlds in the universe of sound. Davies sought to overcome a sense of stagnation caused by using conventional orchestral instruments, where even extended techniques appeared insufficient to capture the sound possibilities that electronic technology had been pointing to. There were however, notable compositions that, although only using orchestral instruments, explored a soundworld that seemed specifically that of experimental electronic music. One example is György Ligeti's *Atmosphères* (1961). Furthermore composers like Helmut Lachenmann (1935-) had envisaged new possibilities within the context of conventional instruments. For instance, with regards to his piece *Gran Torso* (1971) Lachenmann spoke about re-appropriating the string quartet as an element of a shared culture to be made his own[5]; Lachenmann considered compositions in terms of building an instrument[6]. Nonetheless what Lachenmann built were 'imaginary' instruments, formed around a revised instrumentalism attached to them, Davies seemed to follow rather the inverse path where the building of an instrument implied a new instrumentalism.

4.1.2. Escaping the ivory tower.

Like Davies, Lachenmann sought to integrate the new sonorities that were introduced by concrete music in a live concert hall dimension. Lachenmann did so by focusing on the gestural and physical energy required to play orchestral instruments, describing his music as *musique concrète instrumentale*[7]. Davies similarly called Shozyg I a '*musique concrète*

synthesizer' and believed that this instrument was capable of producing the same sounds that Schaeffer was able to obtain only after long hours of work[8]. Building instruments was for Davies a way to avoid the sterility of the electronic music studio, where work was often conducted in isolation, requiring painstaking and repetitive tasks. The techniques developed in the electronic music studio, such as cutting and splicing, were laborious and time-consuming, and the resulting work could only be reproduced by equipment that was cumbersome and difficult to transport, thus originally restricting it to playback and radio broadcasts. Davies spoke of escaping the ivory tower that the electronic music studio represented by seeking to develop a live electronic music[9]. Davies considered himself to be the first British live electronic music composer and indeed live electronic music was to remain one of Davies's main concerns throughout his career. Davies said:

> 'The early history of electronic music is almost entirely tape manipulation with oscillators[10]. It could easily have happened that if the tape recorder had come five years later, people would have been writing oscillator parts to be played live in concerts along with conventional instruments. In other words electronic music could have started out as a live thing rather than something you work on in the studio'[11].

Davies seems to have regretted such a state of affairs and he mainly concentrated on addressing such imbalance by focussing on live performance.

4.1.3. Amplification.

Electronic technology helped Davies achieve his goal of a live electronic music, and electronic amplification in particular was the means that allowed him to fulfil the immediacy and accessibility of his music. Amplification served various purposes for Davies. As mentioned before it allowed him to escape the ivory tower of the electronic music studio and integrate electronic music in live performance. Amplification also

allowed him to build small, compact and portable instruments, ideal to transport to and from venues. Davies had experienced the obstacles that transportation represented at the time of running the OUSEM; thus all of his invented instruments were never larger than a suitcase. In fact, this was an issue that Davies took up with the instruments of Harry Partch, which could often reach considerable size, making them difficult to move[12]. The use of amplification made manual skills less important than with orchestral instruments since their bodies did not need to amplify the sound, technical virtuosity thus lost importance in Davies's instruments. Amplification allowed Davies to introduce unorthodox sound sources in his instrumentarium. The new sounds that Davies discovered pertained to the realm of the 'inaudible', or rather, the traditionally inaudible. It could be said that Davies's sound materials were in fact Cageian 'small sounds'. Sounds that were previously part of background noise were brought to the fore. These sounds were revealed thanks to the use of contact microphones, which transduced mechanical vibrations into voltages that could then be amplified. Amplification revealed the sound potential of different unorthodox materials such as variously tensioned steel springs, strings, small saw blades, shaped objects of metal, wood, plastic, and so on. Objects were used as vibrating elements, and some of these were assembled to create a musical instrument, whose sound could be diffused by a single performer over loudspeakers, either stereophonically or quadraphonically. Davies amplified them so that they could be on a par with other instruments. In fact, he performed extensively with his inventions in ensembles that often featured traditional instrumentation. With his amplified instruments Davies was 'quarrying the sources of mechanical and electrical sound production and from this an as yet un-heard reservoir created the basis for compositions and improvisations'[13]. Thus the research into the universe of sound for Davies inevitably passed through electronic technology.

4.1.4. Against synthesizers.

Despite the importance that Davies attributed to the live dimension of music, and the fundamental role that electronic technology played in allowing him to carry out his research into sound, liveness and electronic technology were certainly insufficient to guarantee the achievement of the radical renewal of music that Davies wished for. Indeed Davies understood his work at building instruments as in direct opposition to commercial synthesizers[14]. For Davies amplifying small objects, his DIY ethic, and the low-fidelity aesthetics employed in realising them, represented a radical stand against the mass-produced synthesizers with factory pre-set sounds, which were beginning to become widespread in the late 1960s and 1970s. This was in Davies's view an unnecessary limitation that stifled the development of an electronic experimental music. For the same reasons Davies also denounced the use of electronic instruments that sought to reproduce orchestral sounds[15] a claim that echoed Cage (see chapter 1). For Davies the fulfilment of electronic technology was in the exploration of new possibilities rather than in seeking to emulate sounds that were already available. Thus Davies revealed a much more critical appraisal of electronic technology than that of composers of earlier generations. Edgar Varèse and Oram held a Promethean view of this technology, predicting its advent as marking the liberation of music from mediation and allowing for the direct expression of the composer's intentions (see chapter 2). On the contrary Davies held a rather more Icarian view of electronic technology, aware of the risks that were inherent to its uncritical pursuit.

4.2. Invented instruments.

Davies devised several types of instruments, such as concert instruments, toy instruments, instruments for exhibition and found instruments. These categories were not mutually exclusive and often the same instrument could be used in a concert or exhibited in a gallery (see chapter 6).

Half of Davies's instruments were amplified, including the majority of those built for concerts. These instruments were played with different techniques, such as hitting, blowing, pushing, scraping, shaking, and rubbing materials. There usually were no detailed instructions on how to play these instruments, since Davies wished each player to explore their potential without pre-conditions, which he also saw as a way for him to learn more about them[16]. His instruments, thus, while offering a certain restriction on the possible range of sounds, allowed the performer to decide what sounds to play, creating similar conditions to those of an indeterminate score.

4.2.1. Early instruments.

Since 1967 Davies began using contact microphones to amplify the sound of objects such as combs, broken light bulbs, and springs. This practice was first included in the realisation of the piece *Galactic Interfaces* (1968)[17] for six performers, two stereo tapes, and electronic equipment. Davies started working on this piece in November 1967 and completed it in March 1968. Davies specified that the following were needed:

> 'Various small "instruments" specially constructed, fitted with contact microphones etc. Each instrument need only have a limited range of pitch and timbre, provided that the results are sufficiently varied when highly amplified, modulated, (e.g. with very low and very high generator frequencies), etc. They should preferably be made out of a

variety of materials (wood, metal, glass, plastic) and made to sound by a variety of different "strikers" also of a variety of different materials'[18].

The piece was realised at the electronic music studio at Goldsmiths college and was first performed by Alec Hill (the president of OCMC – see chapter 3), David Lumsdaine (1931-), John Mitchell[19] and Stephen Trowell[20], with Davies and Richard Orton at the electronic equipment. The title referred to the effect created by superimposing tape sounds with live sounds, and their electronic transformation. The piece required a number of items of equipment such as stereo mixers, ½ track stereo tape recorders, 4-channel switching unit, 4-channel photocell divider, two sine and square wave generators, two ring modulators, and a fuzz box. The advantage of using such a set up was that the performers did not need to be classically trained musicians. Each of the original four performers of *Galactic Interfaces* came from different backgrounds: Hill was a nuclear physicist working with computers, a clarinettist and a self-taught composer; Lumsdaine was an established composer; Mitchell was a jazz bass player and pianist who had developed an interest in improvisation and electronic music; Trowell was a bank clerk who had no formal musical education but possessed a wide knowledge of contemporary music.

Around the same time of *Galactic Interfaces* Davies also realised the Glass Rods and Bulb, one of his first invented instruments. This was electronically amplified and part of the several small amplified auxiliary instruments on which Davies worked between 1967 and 1968 such as the Comb Quartet, the Projector Bulb Quartet, the Spring Tin, and the 2 Threaded Rods (see figures 11-15).

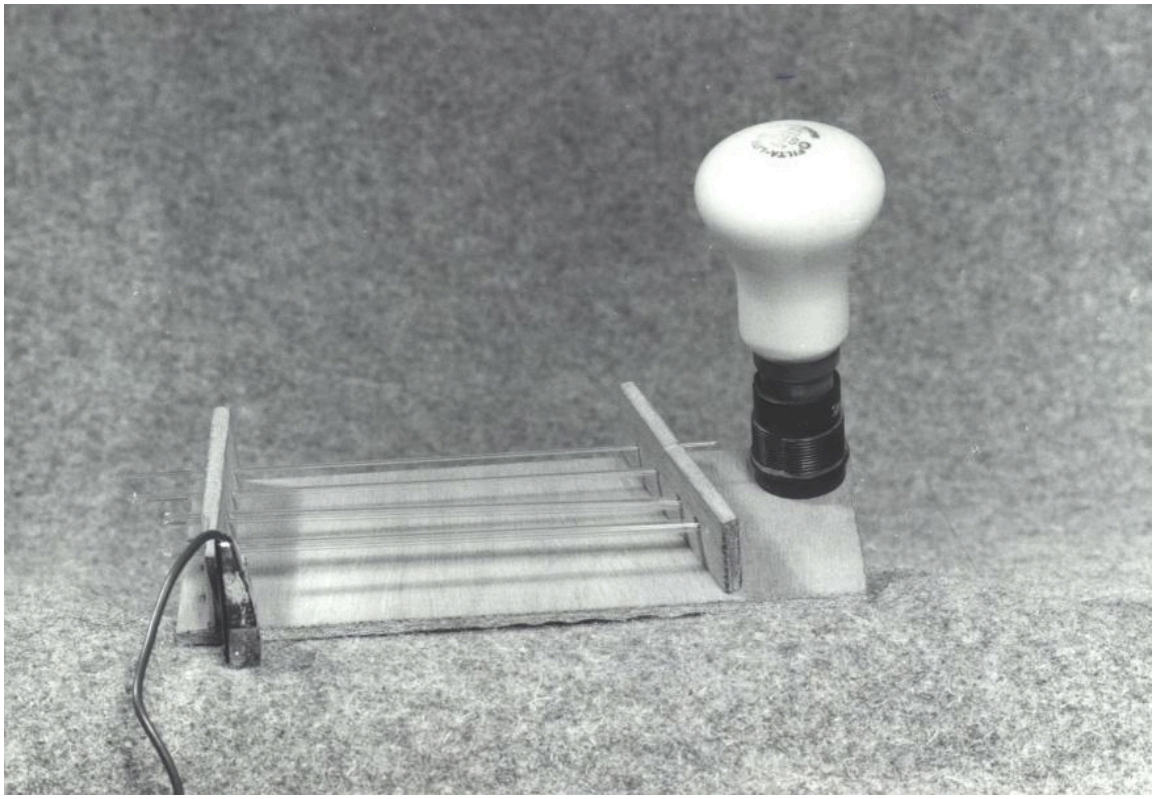


Figure 6. Glass Rods and Bulb, (photograph: Michael Dunne, HDA).

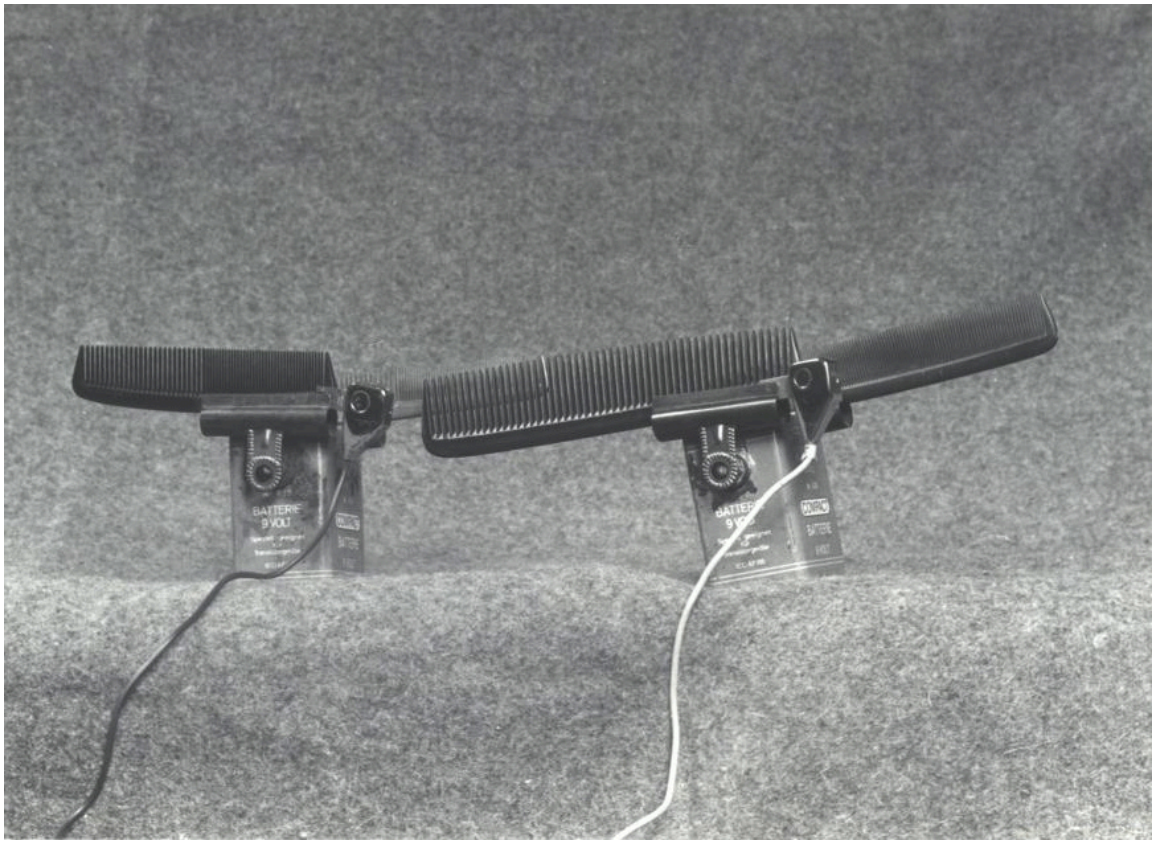


Figure 7. Comb Quartet, (photograph: Michael Dunne, HDA).

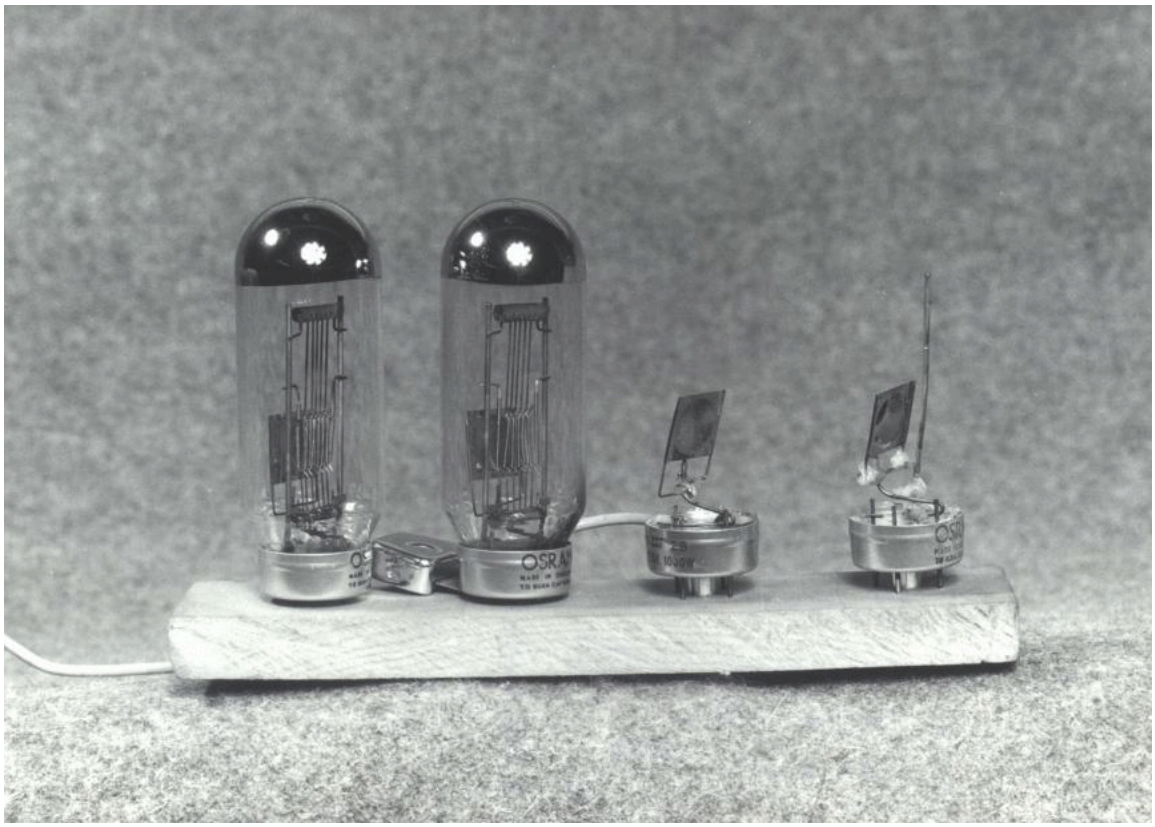


Figure 8. Projector Bulb Quartet, (photograph: Michael Dunne, HDA).

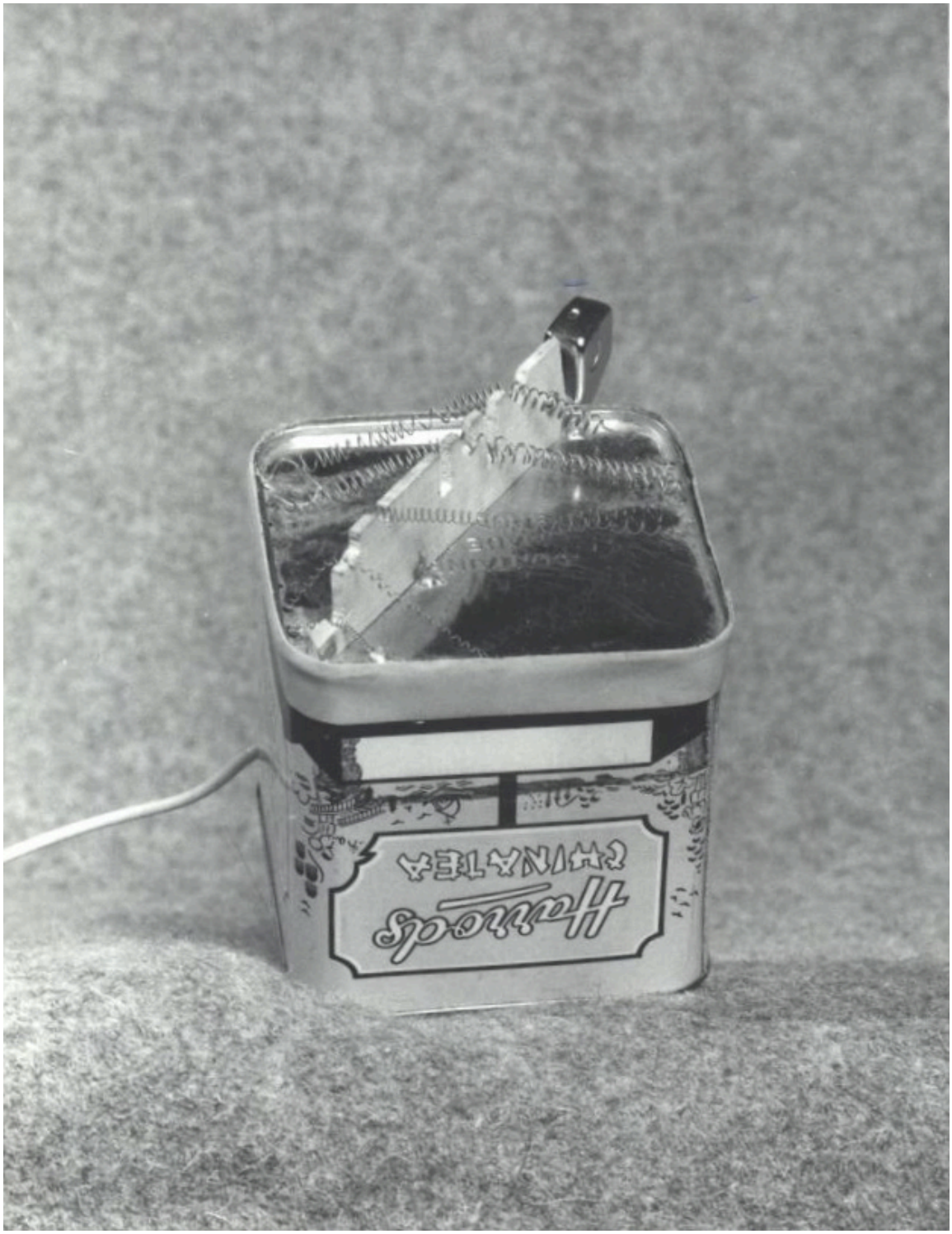


Figure 9. Spring Tin, (photograph: Michael Dunne, HDA).

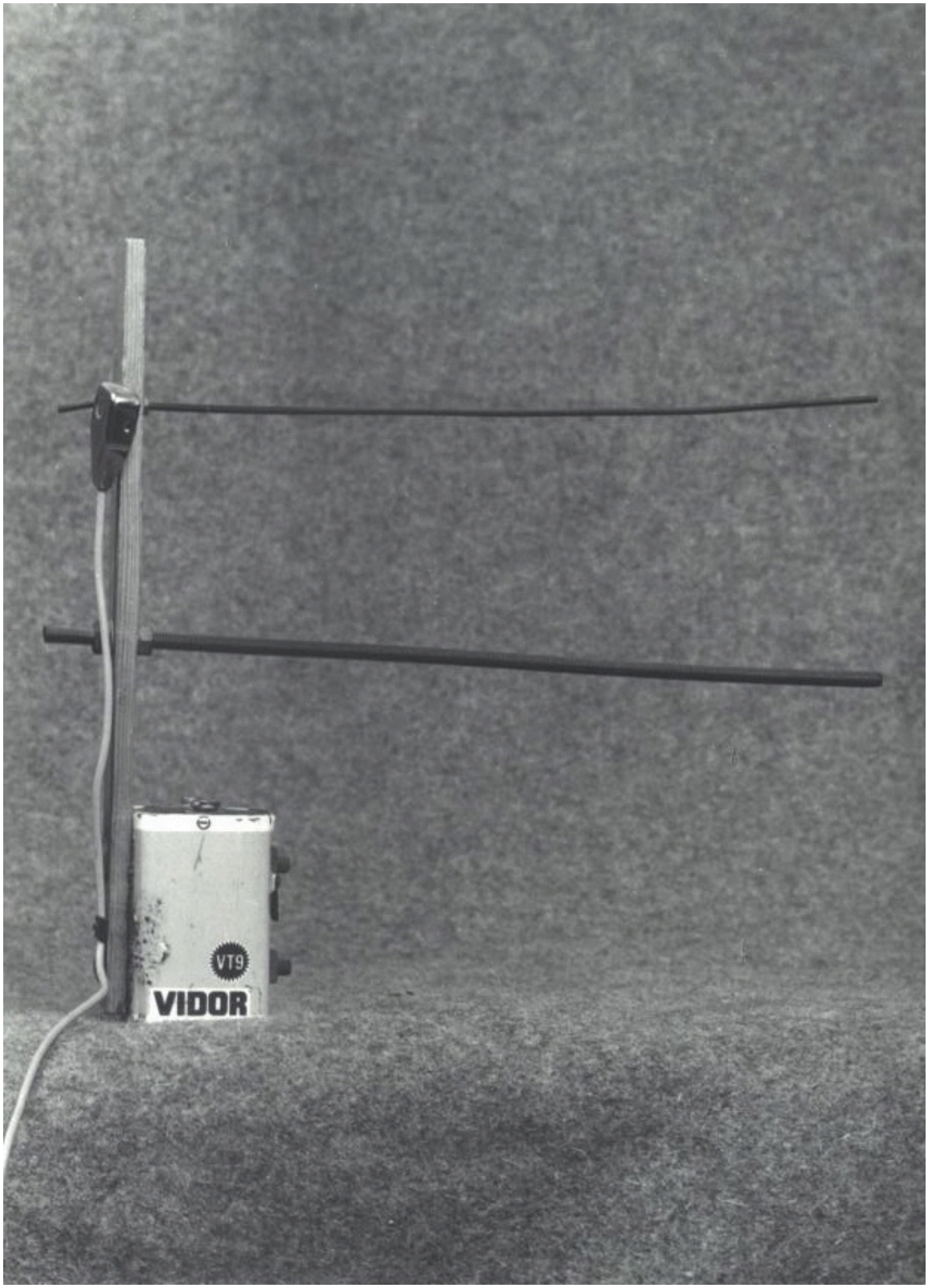


Figure 10. Two Threaded Rods, (photograph: Michael Dunne, HDA).

5.3.2. Shozyg I.

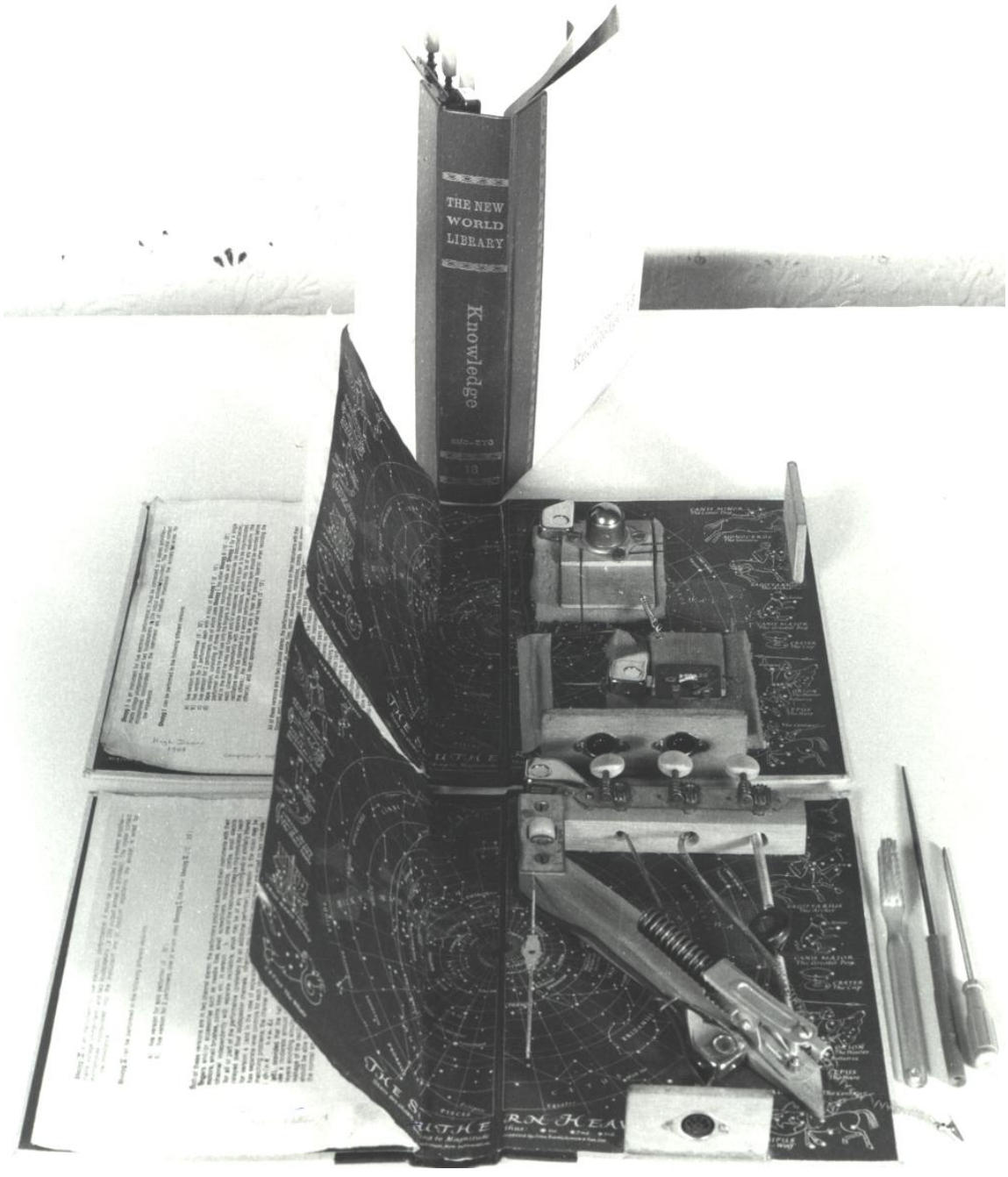


Figure 11. Shozyg I and Shozyg II, (photograph: Michael Dunne, HDA).

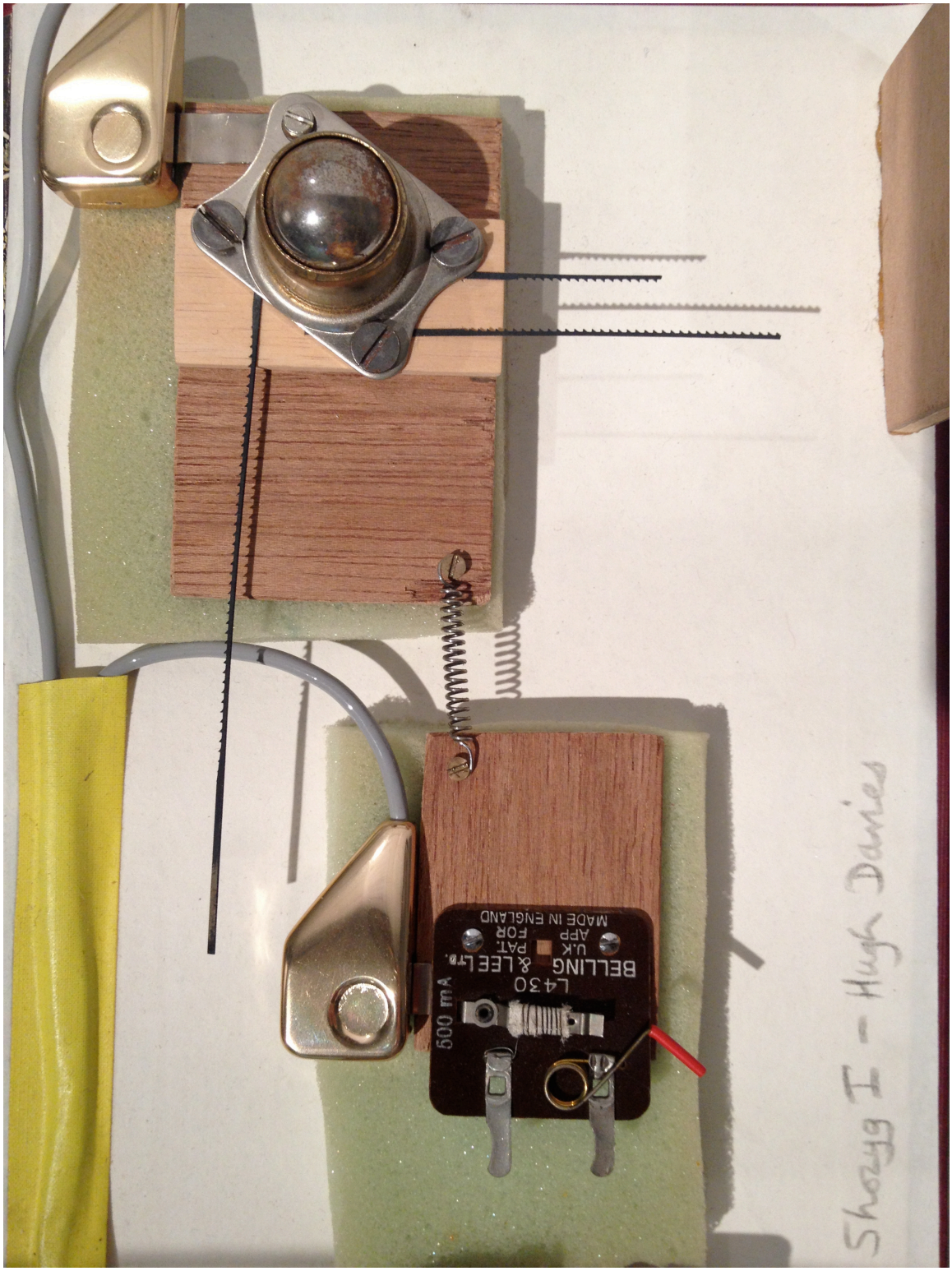


Figure 12. Shozyg I (1969 version) detail, (photograph: my own).

Around 1968 Davies realised what he considered to be his first successful attempt at building a self-contained instrument that could be played autonomously[21]: Shozyg I. In concept, Shozyg I was similar to the instruments needed for *Galactic Interfaces*, featuring various objects amplified by contact microphones. Shozyg I was realised as part of a series of works produced by members of the Arts Laboratory; each of these works featured in the covers of the *The New World Library: Knowledge* encyclopaedia volumes, which were recovered from the street. As part of this project Davies built the only two musical instruments in the collection, Shozyg I and Shozyg II (see figure 16). Shozyg I consisted of the book cover of the last tome of the encyclopaedia, volume thirteen; the book measured 10 inches in height, 7 inches in width and 1 ¾ inches in depth. The instrument took its name from the indices on the spine of the book, which included entries from Shoal to Zygote, thus from 'SHO' to 'ZYG'. Most of the pages had been removed, and objects were mounted on the inside back cover of the book. The objects in Shozyg I were a ball-bearing, three fretsaw blades of different length, and two kinds of spring. These objects were grouped in two 'islands', with each laying over a piezo-electric pickup, which sensed the vibrations through the solid objects. Each of the pickups was connected to an audio socket, then feeding into a pre-amplifier and loudspeaker (see figure 17). Thus, the resulting sound of Shozyg I was polarised, with the ball-bearing and fretsaw blades heard on one side, and the spring on the other. The central spring, on the other hand, because it was stretched over the two islands, was audible on both channels. The sounding-objects and the microphones were each placed on a separate piece of foam that absorbed other vibrations, such as those that might have been produced by the table on which the instrument could have been placed. These objects could be played using fingers, fingernails, screwdrivers, needle files, toothbrushes, and small electric motors, among other objects. The microphones were an integral part of the instrument, as Davies specifically chose them according to their

filtering capabilities. Shozyg II was originally made in a set of two copies, which were almost identical in terms of sound capabilities. In Shozyg II the ball-bearing and the fretsaw blade were substituted by a rubber band, two flexible strings, and a double spring. These objects were fixed to guitar machine heads. The instrument had a stereophonic output with each half of the instrument primarily connected to one loudspeaker, but the sound of the other half still audible, albeit with a different timbre and volume. Five copies of the original version of Shozyg I existed, and four of Shozyg II. The original Shozyg I is now kept at the Science Museum, while no copies of Shozyg II have been recovered so far. Fifteen additional copies of Shozyg I were also made for a special double edition of the revue *OU* of March 1969, which until then had been titled *Cinquième Saison* and was then in its first full English publication. The magazine was published by the French poet Henri Chopin (1922-2008). Chopin was author and promoter of *poésie sonore*, sound poetry, a branch of poetry at the vanguard of ontological and aesthetic literary discourses. He seemed to have felt a sense of kinship between his work and Davies's Shozyg I. Perhaps one key element was the notion of integrating everyday sounds in an artistic context through electronic amplification. Like Davies, Chopin had been focusing on what was 'inaudible' in poetry by amplifying sounds produced by his utterances. For instance he sometimes swallowed microphones so the sound of his speaking could be picked up from inside his body. For example, for *Throat Power* (1974) Chopin placed a microphone close to his lips and he swallowed a small microphone to record sounds produced by his internal organs; he then further processed this material. The resulting piece bore strong relations with electro-acoustic music because of the recording and processing techniques involved. Chopin believed that silence did not exist, but was rather an invention of a repressive government to hush those voices that came from the oppressed minorities[22]. Chopin contributed

collages to the version of the Shozyg I included in the revue *OU*. These featured on the few remaining pages that were left attached to the book cover (see figures 18-20).



Figure 13. Shozyg I (1969 version), collage by Henri Chopin, (photograph: my own).

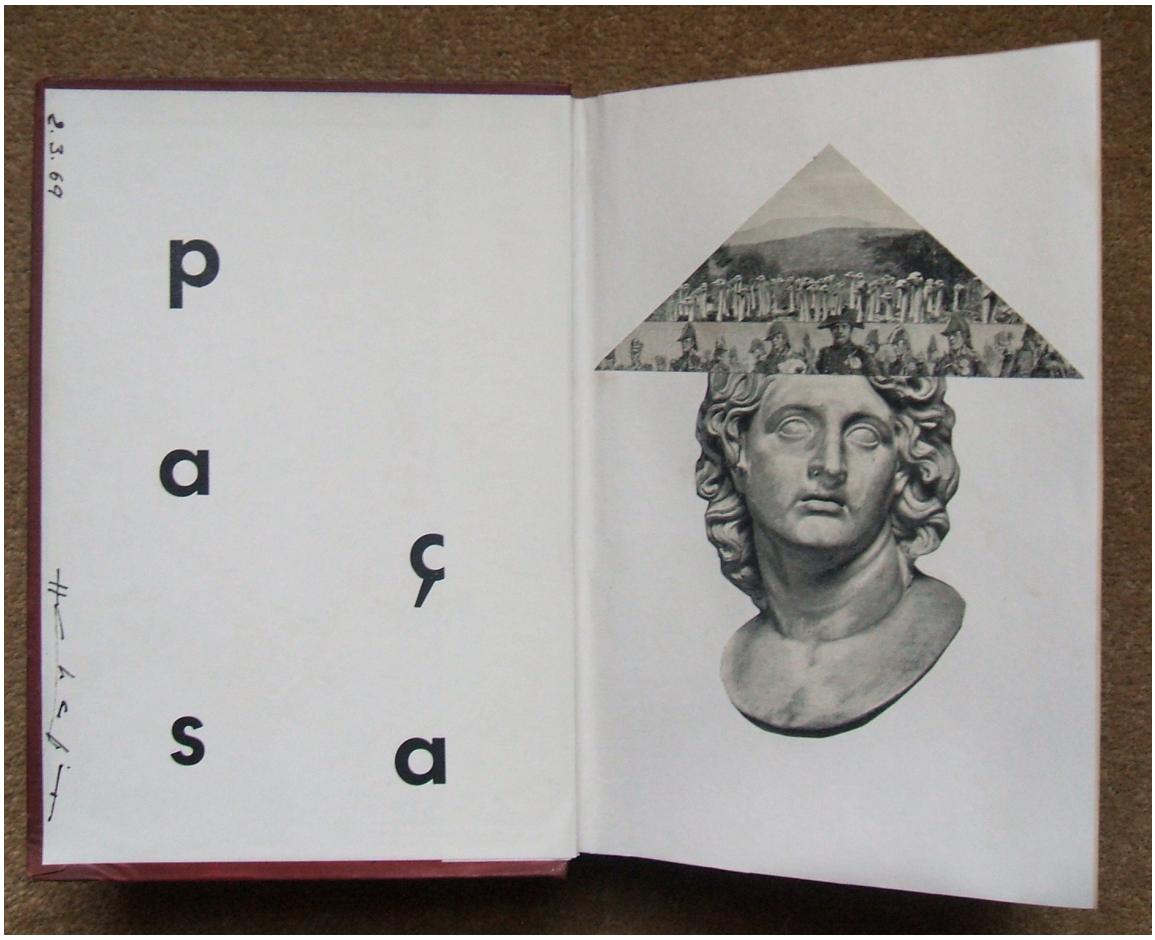


Figure 14. Shozyg I (1969 version) detail, collage by Henri Chopin, (photograph: my own).

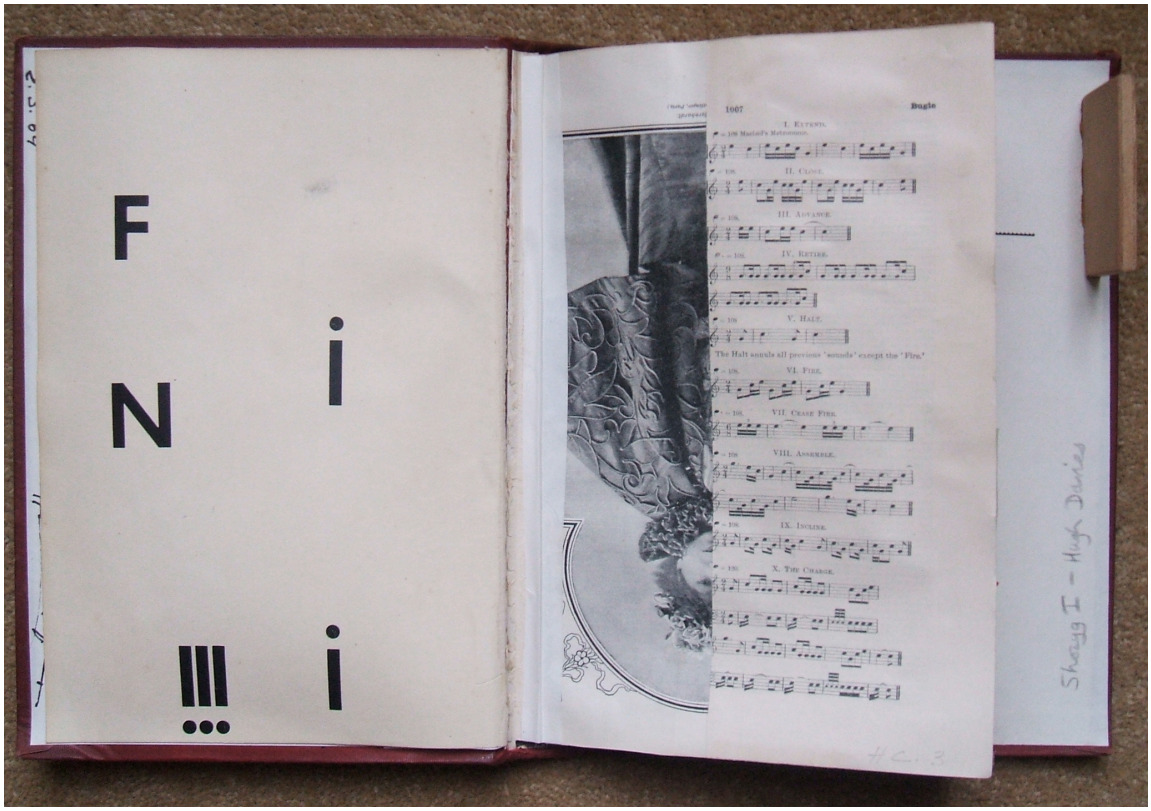


Figure 15. Shozyg I (1969 version) detail, collage by Henri Chopin, (photograph: my own).

Such visual work seems to have served the purpose of contextualising a musical instrument in a poetry review. Also, the collage technique could be linked to Davies's practice of juxtaposing an array of common objects within the 'frame' of a musical instrument. From this perspective Shozyg I could be considered a three-dimensional collage, or rather an assemblage. Chopin, as a poet, also found appealing the idea that the instrument was encased in a book cover and called Shozyg I a '*livre électronique*'[23]. Included in this edition, among pieces by several poets such as Bob Cobbing (1920-2002), were Davies's set of instruction for the playing of Shozyg I and II (see appendix 1, figure 67)[24]. Indeed, although originally Davies wished to attach a particular notation to these instruments, he later decided to just add a series of verbal instructions. In this text, Davies listed four possible categories of performance versions for Shozyg I. The duration specified for each of these categories was inversely proportional to the number of players prescribed. Thus for a solo performance, a time range between eight and twenty minutes was suggested, while for three players (each having their own copy of Shozyg I or II) between eight and fifteen minutes. The fourth option instructed the performer to record a number of performances layering them out, at each subsequent performance the player was to interact with the previous recording. Although this tape version was for solo performer, a second person was supposed to be carrying out the modulation, much like in the arrangements for *Mikrophonie I*. After the categorisation of the different versions Davies added performance notes, which consisted of practical directions aimed at developing as wide a range of each object's acoustic capabilities as possible, and their variety. In the performance notes for Shozyg II, Davies wrote:

> 'Exploit the differences in timbre and volume obtainable stereophonically from a single sound source and the effects produced by "modulating" vibrating with non-vibrating sound sources (other objects; fingers or accessories–e.g. low-pitched sounds from plucking the double spring, and simultaneously "stopping" it, and holding or fixing the rubber band and the two flexible strings so that they interfere with another object or with each other when they are set into vibration'[25].

Shozyg I and Shozyg II mostly shared the same set of instructions; these however read more like suggestions than prescriptions. In fact the continuous and highlighted-on-the-text use of 'can' and 'may' was evidence of the relative freedom which Davies granted the performer. Nonetheless, this was far from being a complete relinquishing of responsibility about the instrument and its musical output: it is clearly stated on the sheet that Davies reserved the rights to allow others to build and, or perform publicly on the Shozygs; however it is not clear yet what kind of ownership Davies held on his instruments. In any case there are no known attempts from anyone other than Davies at building an instrument that was specifically called a 'Shozyg'. Davies wished to commission works for his instruments and combining them with tape. David Keane (1943-), who had exhibited with Davies at the *A Noise in Your Eye* show, has been reported to have done so[26], but no documents witnessing such work have yet been recovered. Later in his work, Davies began to understand the term 'Shozyg' as applying to all of his instruments that were amplified, especially those which featured in unusual containers; so 'Shozyg' became a category name, a family name for a wide range of inventions. Davies built Shozygs encased in televisions sets, radio sets, breadbins, electric toasters, electric heaters, and accordion files. For instance, in Miniature Radio, amplified loose springs were placed in a radio set where the radio receiver had been removed. In this instrument the microphone was connected to the amplifier input, so that the sound could be heard over the built-in loudspeaker or connected via the socket on the side of the case to a larger amplification system. Davies said: 'one day I will probably have an exhibition of a Shozyg kitchen and living room!'[27]. It is tempting here to draw a parallel with the furniture music that was imagined by Erik Satie, but while for Satie such music should aspire to the status of furniture, Davies, as Cage (see chapter 1), worked towards the opposite aim, hoping to turn furniture to the status of musical instruments.

The majority of the performances on the Shozygs available on recording involved Davies. *Shozyg I & II* (1969), of about ten minutes in length and included on the revue *OU* Anthology box set published by Algha Marghen, was recorded by Davies and Orton. *Shozyg Sequence No.1*, which lasted twenty-one minutes and featured on a 1982 release by Free Music Production, was a live performance given by Davies at the Claxon Geluid Festival, held in Utrecht in March 1979. A recording of Shozyg I, made in 1968, of approximately four minutes and a half, was included on the 2001 release on GROB, *Warming Up with the Iceman*. This release also featured a 1990 recording of circa twenty minutes of *Shozyg Sequence No.3*. All these recordings consisted of improvisations by Davies on his instruments. Among the performers and composers who played the Shozyg was John Tilbury who recorded the tape version of Shozyg I for a Polskie Radio broadcast of 1968[28]. In *Shozyg Sequence No.1* (1971), and *Shozyg Sequence No.2* (1977), both revised in 1980, the instruments employed were Shozyg I, the 3D Postcard, Magnetic Pickups for Loose Springs, Springboard Mk. V, Long Spring, Eggslicer on Shozyg I, Bowed Guitar String, and the Concert Aeolian Harp (see figure 21).

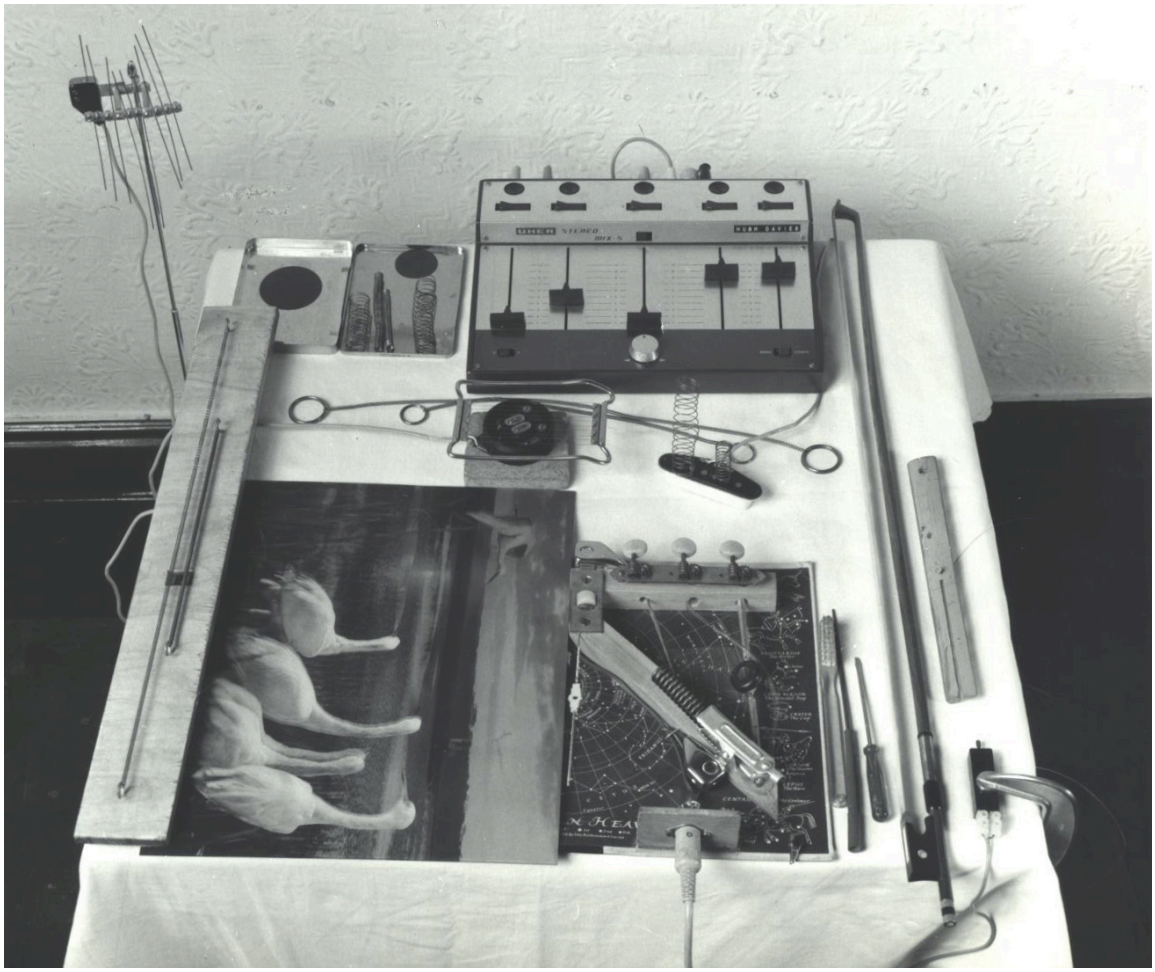


Figure 16. Davies's table setup, clockwise My Spring Collection, Eggslicer, Shozyg II, Springboard, and the Concert Aeolian Harp, (photograph: Michael Dunne, HDA).

A performance on Shozyg I offered a varied listening experience both in its live and recorded form. Indeed Davies declared himself to be continually astonished to find new sound possibilities in the instruments whenever anyone played them[29]. The 1969 recording *Shozyg I & II* was a piece characterised by intermittent sounds that had a steep attack curve, evincing the mainly percussive nature of the instrument. Nonetheless, other modes of excitation were employed: scratching and plucking for example. In the case of the ball-bearing, spinning became a musical gesture. The variety envisaged by Davies found realisation in the intensity range of the sounds, and their dynamic development – which tended to be proportionally matched by an increase in noise content. The noisy quality of the sounds was a constant throughout the performance, although more regularly pitched sounds also featured. The metallic timbre of the sounds was directly related to the materials employed, and although filtered by the microphone response range, their origin was transparent, especially in the case of the lower spring. At the same time, because of the unlikelihood of the sound sources employed and their amplification, their aural experience was surprising and novel. The amplification of the objects clearly stated the purpose of the Shozygs as instruments for performance, since the intensity of the acoustic content would have otherwise been too low to be detected by an audience. Thus, amplification was not only an aesthetic and political strategy (discovering the previously inaudible, and seeking integration), but also a solution that satisfied a more traditionally musical necessity. As it has been said before, Shozyg I could be considered as a continuation of the work that Davies had carried out with Stockhausen, and in particular directly inspired by *Mikrophonie I*. In turn, according to Maconie, Shozyg I was also an inspiration for Stockhausen[30]. Indeed Maconie compared Stockhausen's unpublished and unfinished piece *Singreadfeel* (1970) to Shozyg I. Maconie described this piece as a 'joke piece', a 'kind of Harlequinade doctor's kit containing all manner of curious and common-place sound-producing objects'[31]. The piece was

composed for singer and an 'instrument case' which contained 'touch objects' consisting of 'two identical aluminium castings of mildly erotic nature (different editions for "Gentlemen" and "Ladies" are prescribed), one of which is heated, the other cooled electrically. Current is switched on at the start of a performance, which ends abruptly when either object becomes too hot or cold to handle'[32]. Although it is arguable whether Davies's Shozygs possessed such an overt sexual content – and of such stereotypical understanding – in *Singreadfeel* the idea of encasing objects for tactile exploration and the humorous approach in its devising certainly recalled Davies's inventions. Such characteristics could be situated in the broader context of the aesthetics of the Fluxus movement, of which more will be said later in this chapter.

4.2.3. The Eggslicer.

Davies also used everyday objects for musical purposes with minimal alteration of the item's original state. This was a similar strategy that had been employed in the fine arts by Marcel Duchamp with the readymades and which will be discussed more substantially later in this chapter. Davies's selection process and use of these objects in concert performances validated these objects as musical instruments; an example is the Eggslicer. Davies used the 'strings' of this kitchen utensil to produce sounds, altering their pitch by holding the sides of the Eggslicer to vary the tension. Another way of playing the Eggslicer was blowing on it, a method that Davies used to play this instrument, as well as its relatives, the Tomato Slicer and the Cheese Slicer. These instruments were used for the piece *Salad* (1977, rev. 1981), where Davies amplified four different found egg slicers (different brands had their strings tuned to different pitches), two identical tomato slicers with saw-blades, and a cheese slicer with a wire cutting edge, using the same magnetic pickups he had used for another family of

instruments called My Spring Collection. Later Davies also realised *Eine kleine Eierschneidermusik (Eggslicer Quintet)* (2000-1), a piece where the recordings of the performance by each member playing an Eggslicer were layered at different times. Egg slicers had been previously used as musical instruments amplified by a contact microphone; for instance the English free-jazz drummer Tony Oxley (1938-) amplified egg slicers, as well as other objects such as springs and knives since the early 1970s. However, Davies was the first to use a magnetic pickup to amplify their sound[33]. The Tomato Slicer was a later companion to the amplified Eggslicer, and followed the use of fretsaw blades made in the Concert Aeolian Harp, which was designed as an extension of the possibilities of the Eggslicer.

Davies developed the Concert Aeolian Harp from the Eggslicer by mounting the fine fretsaw blades on an aluminium frame, which would have then been fixed to a stand. The blades were arranged in parallel and microphones placed at the extremity of the aluminium frame that ran perpendicular to the blades. To play the Concert Aeolian Harp, the performer needed to blow on the fretsaw blades, producing a quality of sound similar to an Aeolian harp. In the Aeolian harp, the impact of the wind and the position of the strings were crucial in producing sound. This sound, rather than its mechanism, motivated the name of the Concert Aeolian Harp, although the blades could be made to sound with a strong wind. Davies blew on the instrument freely, or aided by a plastic straw. He also used a series of objects to excite the blades, such as feathers or springs. The Concert Aeolian Harp had different versions; the first consisted of nine fretsaw blades and was made in 1972. In 1980 Davies added 18 more blades and divided them in two sets. The 1986 version featured microphones closer to the blades so the sound was less dampened; there were also pieces of rubber in between the two

sets so as to produce clearer gestural movement between pairs of speakers in the quadraphonic image.

4.2.4. Found and discovered instruments.

Davies's instrumentarium also included a series of found instruments, instruments that Davies lifted from the mundane, extra-musical context and repurposed them for performance. Examples are the Perspex Guero, found in a scrap basket at an art school; the Found Shozyg, an amplified tension unit from an old computer; the Zanza, consisting of amplified pieces of metal from various dismantled electrical equipment, like the African thumb piano; and the four Percussion Beaters, which were used to play the gHong in Gentle Fire's group compositions. One of the beaters was the tuning piston for an organ pipe (from which Davies also obtained a case for a Far Eastern mouth organ), while the others were fashioned from a padded wooden crate. Among his found instruments Davies counted the Mouth-in-the-Wind. This instrument consisted in the performer's mouth and was played by varying its aperture and position against the wind[34].

Similar to found instruments were discovered instruments. Discovered instruments were instruments invented by someone else, which Davies included in his instrumentarium, often substantially altering them or developing their principle. Among the discovered instruments was the Eargong. Christopher Woodman[35] had first devised it as a joke around 1964 when he was a Research Student at Kings College, Cambridge[36]. Richard Orton, who was a close friend of Woodman got interested in the instrument and no doubt mentioned it to Davies. Davies adopted it in his instrumentarium and also developed its concept with the String Yoghurt (On Coat-Rack). Davies defined the

Eargong as a 'private instrument'[37]. The Eargong was made by attaching two strings to any old vibrating piece of scrap-metal (see figure 22). Davies used especially a rectangular oven grill with cross bars, or used bicycle parts and a metal coat hanger. By winding the strings around one's own fingers and putting one's finger in one's ear, while swinging the instrument so that it would hit one's knees or other objects, it was possible to hear sounds that were only audible through the connection created by the string and the fingers leading up to the ears. The performer thus became part of the very material through which sound travelled. Davies gave such instructions for performance:

> 'Vary the stereophonic effect by removing one finger at a time from its ear, alternating the removal of fingers from ears (different speeds and rhythms), varying the amount of finger removal…Hang small resonant objects from the eargong. Use two or more eargongs together. Sometimes invite another person to perform on the grill for you using small objects such as pens, pencils, and screwdrivers (a crystal drinking-glass drawn very slowly across the crossbar is especially beautiful). Play a duet with another person, swinging the grills so that they strike each other. Each time try to find new sounds, new surfaces. Enjoy yourself. Surprise yourself. Make eargongs from other found objects'[38].

Attaching strings to resonant objects was also a crucial strategy for Davies in developing his work in sound sculpture and sound site-specific installations, and can be compared to the work of David Tudor, and in particular to his Rainforest series; in these pieces Tudor pursued the notion that a loudspeaker was not merely an instrument of reproduction, but could have also a unique voice[39]. More about Davies's work in sound installation will be said in chapter 6.



Figure 17. Davies with Eargong. (photograph: Michael Dunne, HDA).

4.2.5. The Springboards.

The Springboards were part of Davies's concert instruments and featured a helical spring as a sound source, which was the most recurrent element in his invented instruments. Davies thought that, as a sounding object, this type of spring had yet to be fully exploited by the orchestral instrumentarium but that it was nonetheless capable of offering a wide variety of sounds[40]. Davies used primarily extension-type coiled springs for his instruments, rather than compression or torsion types, because the extension type had greater flexibility and because their ends were often twisted into loops, allowing him to attach them to keyrings. The springs could be plucked like a string, or scraped length-wise (with a plectrum, for instance). Depending on the speed of this action, its helixes would be struck at a different frequency, therefore affecting the pitch. In the late 1960s Davies developed the Loose Springs on Magnetic Pickup, an amplified instrument consisting in a long spring with a keyring at each end used for stretching its body and vary its sound. He also realised Springstring, which featured two semi-springs with adjustable tuning tension, to be bowed like a string. These instruments were stepping stones towards the realisation of the Springboard family. The work in devising the Springboards began in 1969, when Davies used a magnetic pickup for the first time and with it he amplified a spring of 14 cm of length and 3mm of diameter. This spring could also be stretched to reach the length of about 40 cm, a method that formed the basis for the first five members of the Springboard family. In fact, the first five Springboards all used identical springs, stretched to different lengths. In general, the springs could vary in length from 20 to 45 cm. Following Mark '0', which consisted of a set of loose springs on a magnetic pickup, each of the Springboards was given a Roman number, indicating a different version and each presenting a different design (see table 1); Davies often abbreviated the word 'Mark' to 'Mk.'. The blockboard, on which the

springs' loop-ends were fixed with screw hooks, was half an inch thick and its shape varied depending on the configuration of the springs. The magnetic microphones used were similar to those used in guitars, the instrument that most closely resembled them and with which they shared the same performance technique. Stopping, plucking, and scraping the springs with fingernails or other means such as screwdrivers, would bring out a variety of timbres, which also depended on the distance of the point of excitation from the pickup, placed in holes in the blockboard (see figures 27-28). In the most complex designs of the Springboards, springs could also be dampened so that the timbre and pitch would alter. One of the effects peculiar to the Springboards was what Davies called the 'artificial reverberation'[41], which consisted in the sympathetic vibration of the undampened springs when one of them was sounded. The first two Springboards (Mark I and II) were originally built for the performance of Stockhausen's *Sternklang* that Davies gave with Gentle Fire in 1970, in which he bowed their springs. Mark I was left unvarnished, but the rest of the Springboards were varnished as a way to preserve the wood of the blockboard and also fulfil the visual effect of bringing out the grain of the wood. The Springboards did not have a correct position in which they could be played, but could be reversed (much like the score of Stockhausen's *Zyklus*). The springs could be arranged in various configurations, but in the majority of cases, they were laid out in parallel. In Mark III, the springs were arranged in a radiating configuration so the blockboard was cut as a semi-circle (see figure 24). In Mark II (of four springs) they were disposed concentrically, while in Mark X and XI (of respectively 5+8 springs and 5+5+10+5 springs) in a spider web arrangement, where springs would be connected through a network of rings (see figure 26). The average number of springs was four, with four instruments featuring that number: Mark I, II, IV, and VII. Mark IX consisted of one 'endless'[42] spring, divided into 6 lengths, of which a special stereophonic version also existed. Mark V had only two springs, therefore it was used often in performance

because it was portable; Mark VIII had nine. The springs could be tuned and Davies had originally marked out some pitches (see figure 25). Where the longer springs showed variations in the tightness of the coils, this was done in order to lower the pitch. In some cases this was as much as an octave lower than it would have otherwise have sounded. For instance, in Mark III, the fourteen springs that featured in the instruments, radiating from a central keyring, were of unequal length. The seven shorter springs were deliberately tuned lower than the seven of medium length. Davies later abandoned the practice of tuning the Springboards as he thought it to be unnecessary[43]. Mark III, VIII, X, and XI all used keyrings in their design: III and VIII had one, X had two, with smaller springs connecting the two, while XI was the prototype of a development in which the larger ring was replaced by individual springs. Davies termed the Mark VI, of five springs, the 'contrabass member of the family'[44], because of the low resonance of its central spring and because the semi-spring on the right could have also been bowed. Mark VII was the 'pocket size soprano'[45] member of the family, and a stereophonic instrument. The relationship between appearance and ease of play did not always match, in fact Davies considered Mark IV to be less interesting visually than Mark II but easier to play[46]. In 2005, the Springboards were exhibited as visual works during the Cut and Splice Festival. In 2012, three members of the Springboard family and a prototype were exhibited at *SHO-ZYG* (see appendix 2), and a recording of the piece *Spring Song* (1970, rev. 1979), one of the earliest solo compositions for Davies's on the Springboard instruments, was played. In *Spring Song* members of this family of instruments could be chosen freely to perform the piece. *Gentle Spring* also featured the members of the Springboards, which were to be chosen freely by the performers (see chapter 4).

Table 1. Springboards classification.

Mark Number(s)	**Number of Springs**	**Notes**
0	Loose springs on magnetic pickup	
I, II, IV	4	
V	2	
III	14	
VI	5	Contrabass
VII	4	Stereo, sub-miniature
VIII	9	
IX	1	Spring divided into 6 lengths
X	5+8	Concentric
XI	5+5+10+5	Concentric

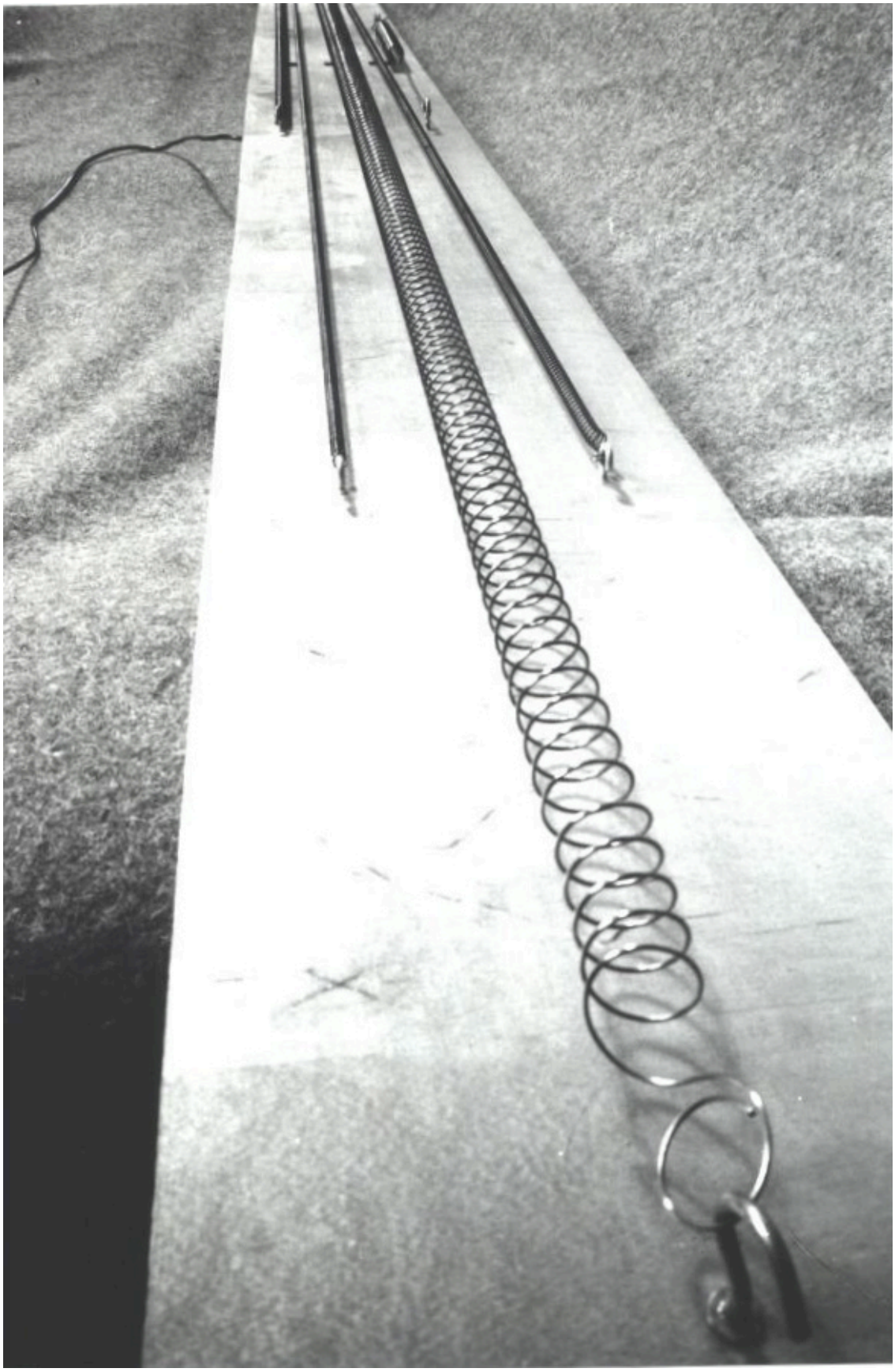


Figure 18. Springboard Mark VI. (photograph: Michael Dunne, HDA).



Figure 19. Davies with Springboard Mark III, (photograph: Michael Dunne, date unknown, HDA).

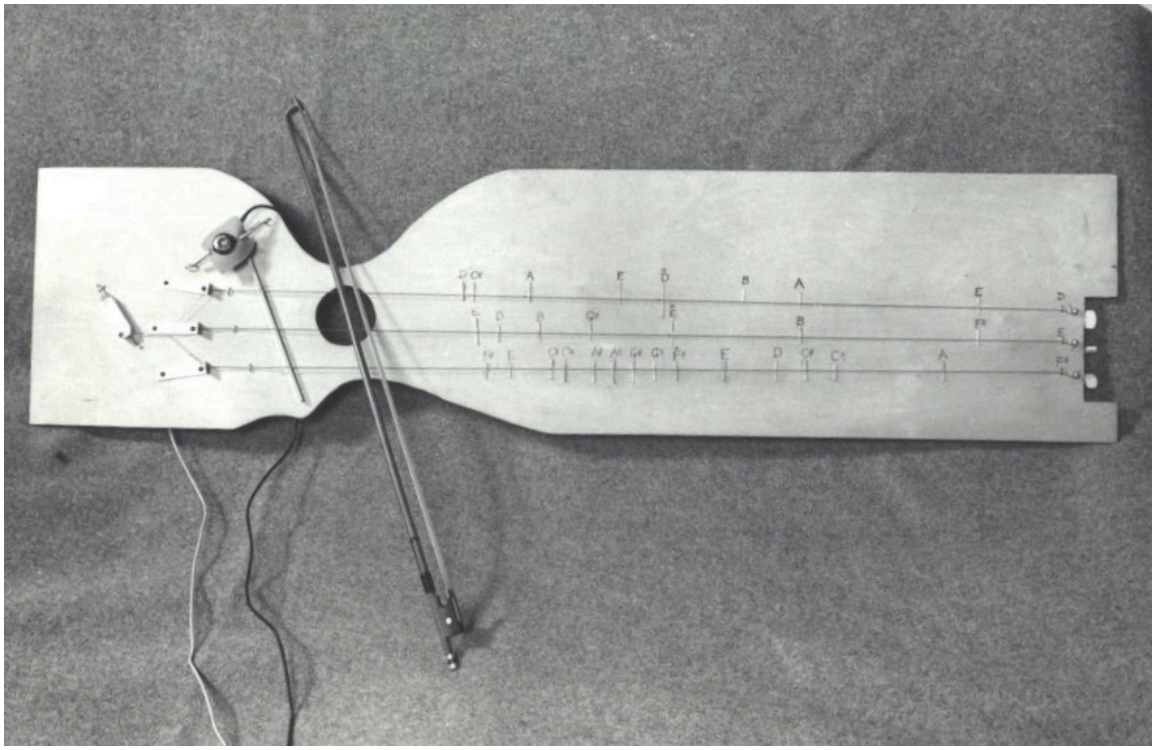


Figure 20. Springboard (believed to be Mark I) with pitches marked out, (photograph: Michael Dunne, HDA).

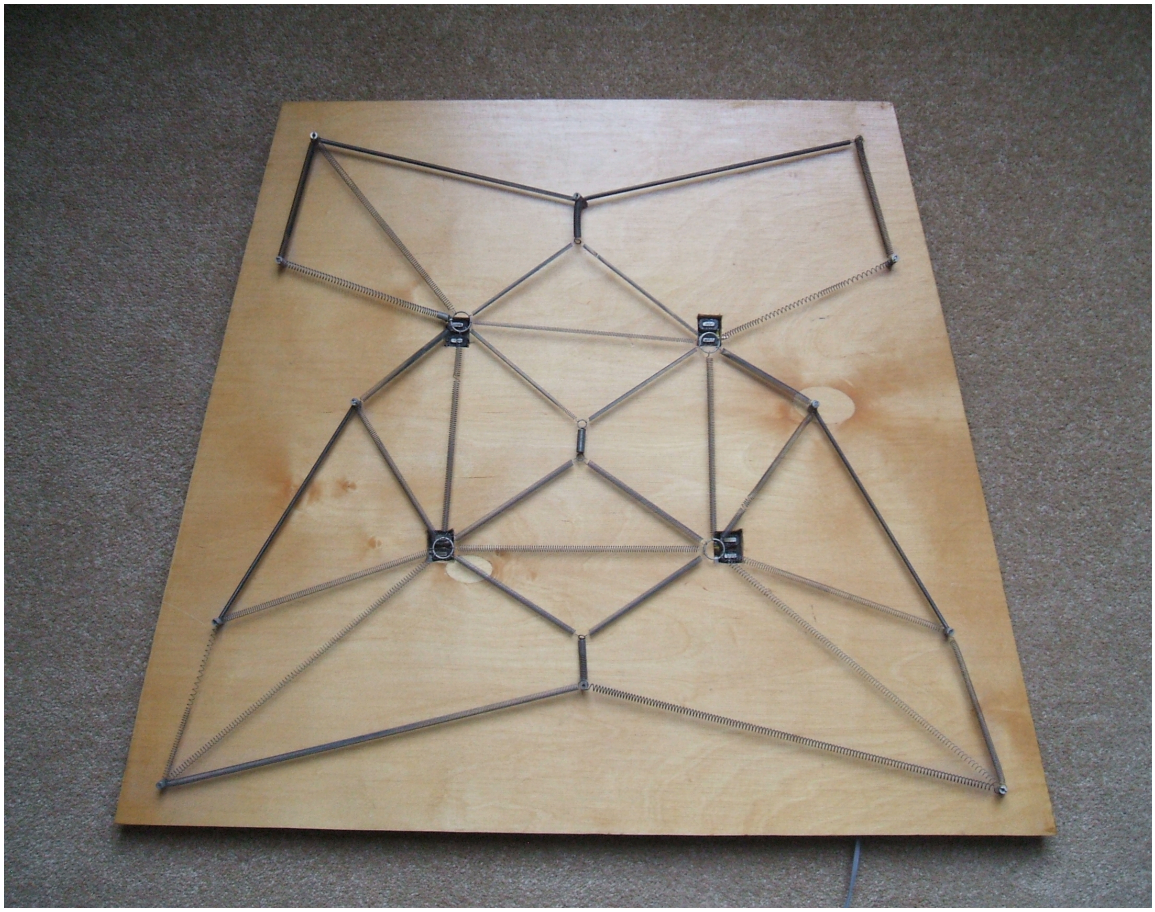


Figure 21. Springboard Mark X, (photograph: my own).

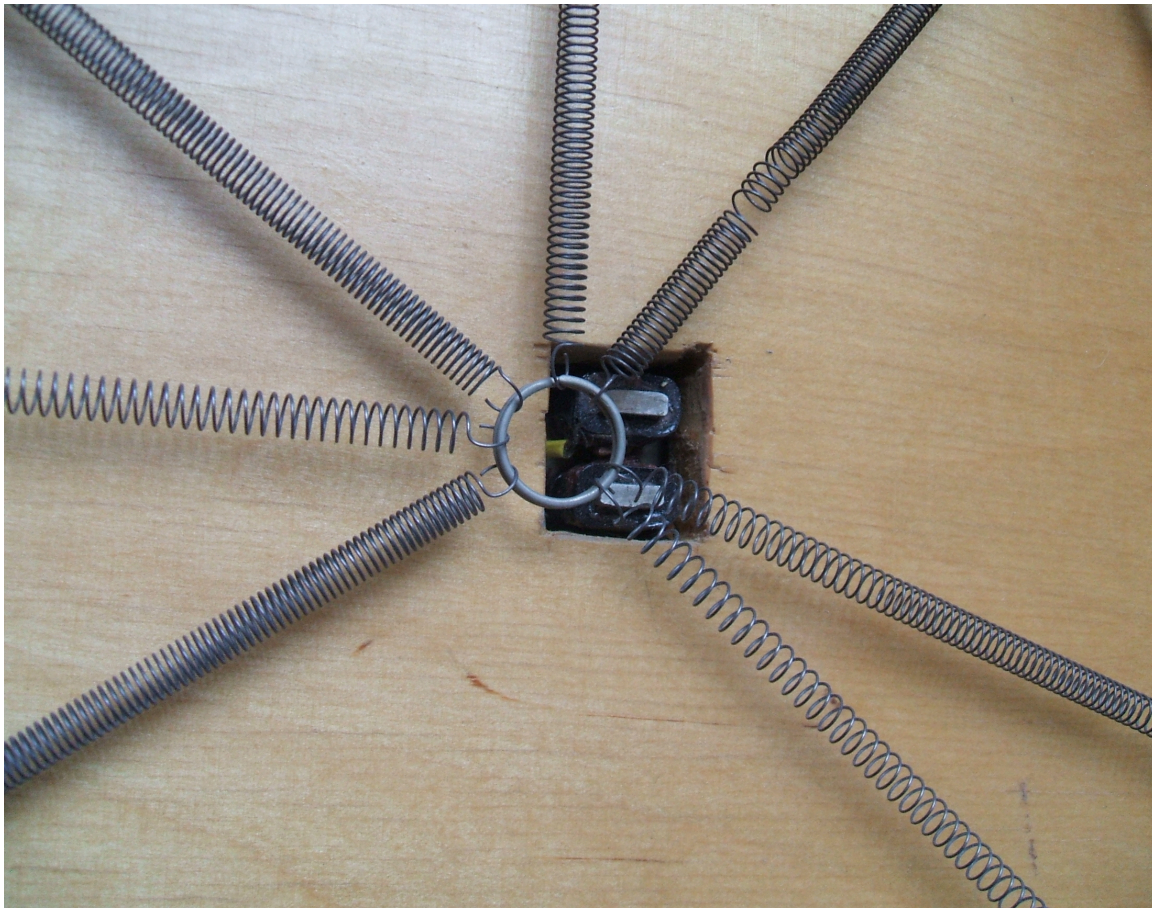


Figure 22. Springboard Mark X detail, (photograph: my own).

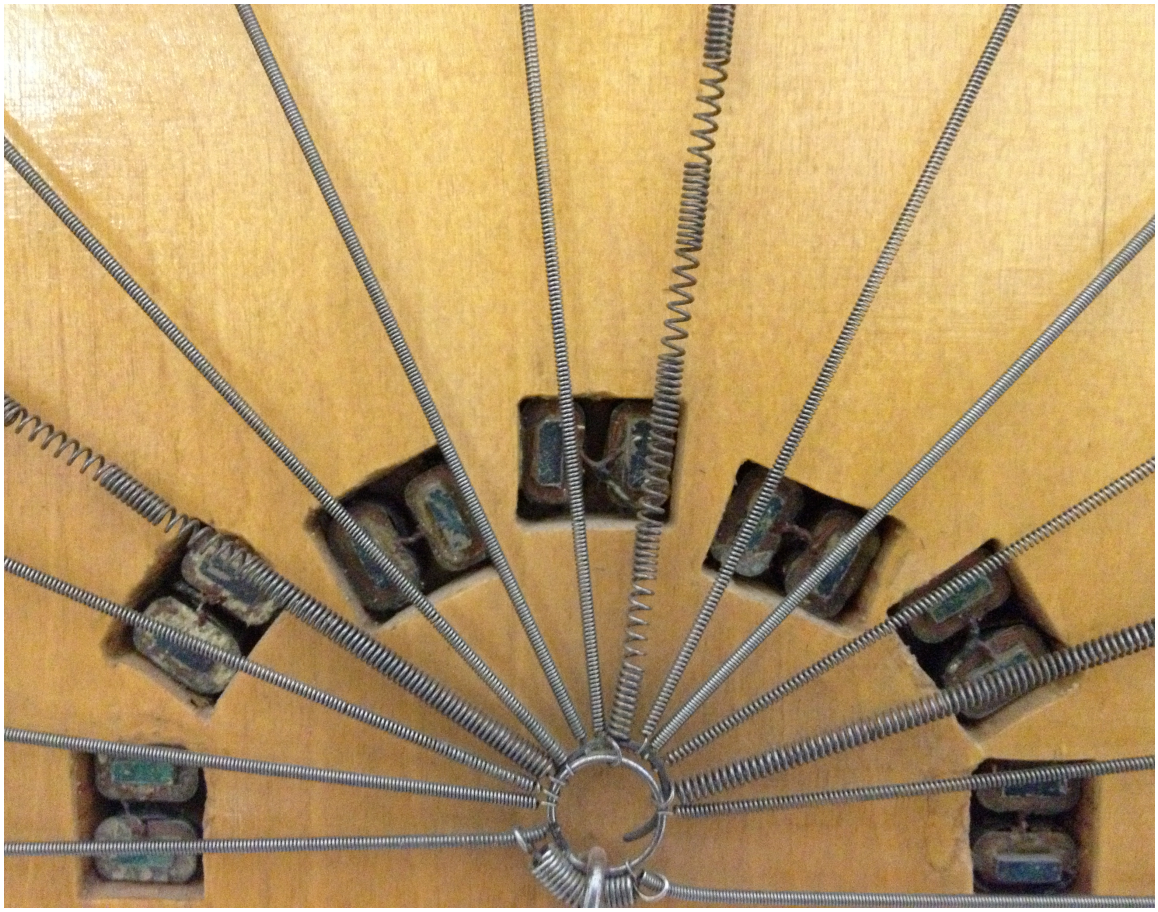


Figure 23. Springboard Mark III detail, (photograph: my own).

Davies had also invented an instrument called My Spring Collection, realised in 1975 and revised in 1981, and consisting of a wide selection of springs - both extension and compression types – fifty in total, of all shapes and sizes, and collected over several years. The springs were excited over four magnetic pickups, or eight when a quadraphonic system was used; the pickups were mounted on top of a small stand. In 1977 Davies recorded various pieces based on My Spring Collection: *Music for a Single Spring*, *Music for Two Springs*, and *Music for Three Springs*. These used six of the fifty springs included in the instrument of a respective length – when unstretched – of 33 ½ inches for *Single Spring*, 10 and 11 ¾ inches for *Two Springs*, and 8, 10, and 15 inches for *Three Springs*. Davies built several other instruments based on springs, among others The Wonderful Widow of Eighteen Springs and the Spring on Carbon Granules Microphone. The Wonderful Widow of Eighteen Springs was built as a homage to Cage, who had composed a piece for voice and closed piano with the same title – a reworking of a passage in *Finnegan's Wake* (1939) by James Joyce (1882-1941). The Spring on Carbon Granules Microphone used a particular kind of microphone salvaged from a telephone mouthpiece, which gave a soft amplification to sounds played on the spring.

4.2.6. The Feelie Boxes.

Davies's instruments fulfilled mainly a musical purpose. However, the collaboration with John Furnival (1933-) raised his awareness of the visual aspect of his inventions. Furnival had studied at the Wimbledon School of Art and the Royal College of Art. In 1964 he had founded Opening Press with Dom Sylvester Houédard (1924-1992), a

Benedictine priest and a concrete poet. Furnival's work also developed within the framework of concrete poetry. His painting-texts often used collage and mixed media, and could consist of ink drawings over paper and wood, or silkscreen prints. For instance, *C'est le Golf pour le Golf* (1974) was an ink drawing and mixed media on wood. In the centre of the drawing a musical staff appeared with notes written below it and exclamation marks above it. To the right of the drawing, chords and a melody were mixed with images of what appeared to be Claude Debussy, who was also mentioned in a sentence written below. Furnival's work was similar to some of the work that was promoted in the *OU* magazine by Chopin, which had Houédard as a regular contributor. With Furnival and his wife Astrid, Davies built the Feelie Boxes, which extended the idea of the Shozyg into a more substantially visual and tactile aspect (see figures 29, 30). The Feelie Boxes also marked a shift in Davies's concept of where these instruments ought to be played. Indeed the Feelie Boxes were not concert instruments as such, but were meant to be found in doctor's waiting rooms, or other such public places. The items used in the Feelie Boxes could include anything from:

> 'Sandpaper, fur, carpeting, corduroy, metal foil, polystyrene, unusual shapes of plastic to be guessed at, gloves made of rubber, wool and string (stuffed with foam rubber, fir cones, plaster of Paris, soya beans, crinkly cellophane wrapping paper, electric light fittings, and a bedspring), steel wool juxtaposed with cotton wool, a nylon dish scourer, metal mesh, a Perspex triangle and corrugated cardboard'[47].

Each Feelie Box also featured special loudspeakers to go with it, of which no further information other than their allusive titles is known so far.



Figure 24. Pupils at Woodchester School play a Feelie Box, (photograph: Tony Stokes, HDA).

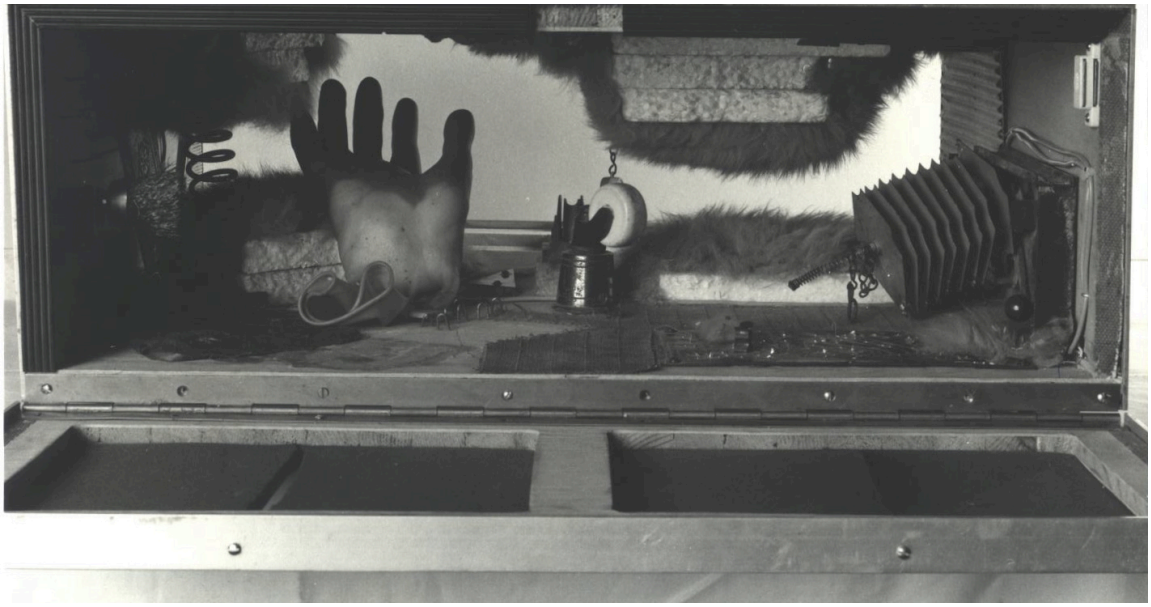


Figure 30. Inside of a Feelie Box, (photograph: Michael Dunne, HDA).

The Jack and Jill box was designed for two people each capable of inserting both hands in the box, which had fur inside. It was possible to open the sides of this box and see what was inside it, but its playing was meant to happen primarily through tactile exploration[48]. This box had stereophonic amplification using two 'clock' loudspeakers devised by Davies. The Lush Box was a Feelie Box with one hand-hole, four finger holes and a letterbox opening. The title referred to the sensation that the playing experience of the box allowed. The Lush Box was amplified with a 'vorticist' loudspeaker. The Bargain Box was a hand-shaking Feelie Box of which one side could be opened, and it was amplified by an 'electric fire' loudspeaker. Lazy Garlic was an instrument made shortly after the first Feelie Box and had a leather cover that had been re-sewn from an old raincoat by Astrid Furnival. The title referred to the reverse side of a found label that gave the performance instructions to 'use according to taste'[49]. This was an instrument that was also used in concerts with a 4-channel amplification occasionally mixed down to two loudspeakers channels. Davies also built a number of variants of the Shozyg concept that were inspired by his collaboration with the Furnivals, or a direct result of it. For example, Shozip was an imitation mixing console that was operated using clothing zips rather than faders (see figures 36, 37). The console of sounds had been built by Davies and left unamplified. Astrid Furnival had developed the Shozip concept and title, also providing the clothing zips, and the knitted cover for the instrument, while Furnival wrote an accompanying text. The instrument was a tribute to Satie for the 50th anniversary of his death in 1925. The Culinary Shozyg was originally made for exhibitions, but five of these were also used in performances with Gentle Fire for the piece *HD Breadbins* (the initials of the title standing for 'Hugh Davies'). A 'devil trap' loudspeaker devised by Furnival amplified this instrument. The work was dedicated to Furnival, and referred to the fact that Furnival claimed that the only 'traditional' instruments he played were spoons[50], this instrument will also be

discussed later in this chapter. In the Sho(zyg?) the title referred both to the word 'Shozyg' and to an earlier arrangement of the aluminium tubes that made the instrument, which resembled the Japanese sho, and said by Davies to be like a 'phoenix with its wings folded.[51]. This arrangement was later rejected in favour of a disposition in a spiral figure.

4.2.7. Toy instruments.

Davies also built a number of toy instruments. His interest in toy instruments is believed to have begun in November 1966 when he attended a concert given in London given by Cage, David Tudor, and Gordon Mumma on toy instruments on occasion of a visit by the Merce Cunningham Dance Company, in which they might have performed *Music for Amplified Toy Pianos* (1960), a piece whose score was similar to *Cartridge Music* and which Gentle Fire recorded for an EMI Electrola 1974 Germany release. Later, Davies claimed that attending this concert was a crucial experience in inspiring him to build his own instruments[52]. Among the toy instruments devised by Davies were the Squeakboxes. These consisted in single free reeds such as those found in mouth organs, accordions, and harmoniums. Annea Lockwood originally inspired these instruments by introducing Davies to doll squeakers, which she used in her Piano Transplants (1967-1971). Squeakbox Mk. I consisted of a series of doll squeakers inserted in an accordion file (see figure 31). The pun referred to accordions often being called 'squeezeboxes'.

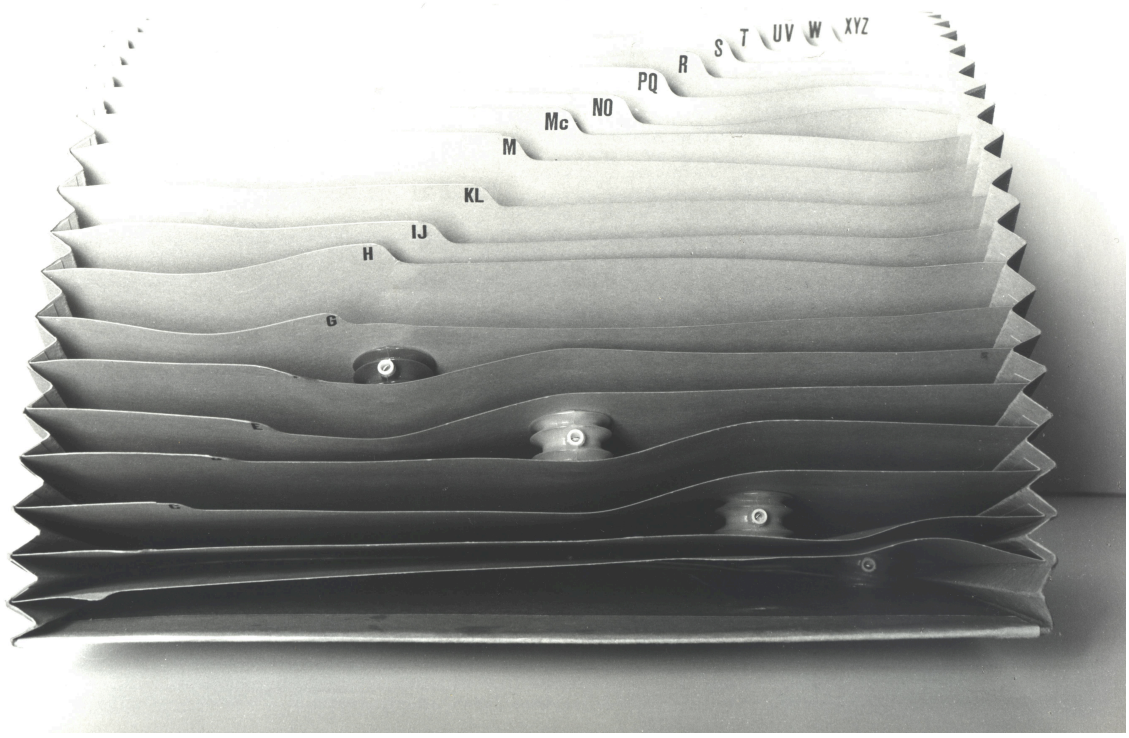


Figure 26. Squeakbox Mk. I, (photograph: Michael Dunne, HDA).

Mk. II reversed the pun 'squeak/squeeze' by using a piano accordion instead of the accordion file. Squeakbob Mk. III replaced an accordion file with a real accordion. Another instruments that used squeakers was the Syringe Squeaker, made during a stay in hospital. This instrument allowed for greater control over making the squeaker sound in different ways. The Squeaker Rod was derived from a childhood toy and featured a woodscrew as in Lazy Garlic. Nonetheless in this instrument the woodscrew was made to look like a length of wooden dowel when screwed into place, rather than an instrument. The Loudsqueaker also used a doll-squeaker mainly to illustrate the pun. The Double Single-Reed Pipe could produce two notes simultaneously with a strong modulation effect. Davies also played the instrument's two halves of the reed separately by moving the mouth to one side or the other, thus halving the length of the tone.

In 1969 Davies realised the piece *Composition with Cadence for Toy Musical Box (on 8 Notes)*, which he transcribed in 1977. The transcription could have been performed on any keyboard instrument, but a toy piano was especially suitable due to the similarity of its sound to that of a musical box.

Another toy instrument was Lady Bracknell (1974), which was inspired by the eponymous character in the play *The Importance of Being Earnest* (1895) by Oscar Wilde (1854-1900) as performed by Dame Edith Evans (1888-1976) in the 1952 screen adaptation directed by Anthony Asquith (1902-1968). The title referred to the type of speech imitation that could be produced with it as well as other range of sounds, from 'chicken sounds to gently mournful wailing'[53]. The instrument was made of a fishing nylon tied to an empty coffee tin, in a similar manner as in a child's telephone, with the nylon to be rubbed with wetted fingers. Davies played this instrument sitting down while the tin was held on the floor by one foot (see figure 32). Lady Bracknell was a toy instrument, but it was later developed as a full-scale installation as a 'room harp'[54].

Davies later extended the principle of attaching a length of fishing nylon to all kinds of resonant objects: furniture, radiators, pianos, garden sheds, kites, etc. This instrument thus represented a bridge to the site-specific installation work that Davies realised later and which will be discussed in chapter 6.



Figure 27. Lady Bracknell, (photograph: Heike Vogt, HDA, 9 January 1983).

4.3. The *New and Rediscovered Instruments* exhibition.

The increasing awareness of the visual aspect of his instruments led Davies to exhibit his instruments in gallery shows. However this did not mean that the musical aspect of his work was to be disregarded in this context. Indeed often the audience at these events was able to interact with Davies's instruments and produce sounds. Among the several exhibitions to which Davies contributed pieces was the *Dorothy's Umbrella* in 1971, organised by Furnival, and in which the English artist Tom Phillips (1937-) and Houédard, amongst others, participated. In this show Davies exhibited the HD Breadbins. This instrument consisted of a plastic bread-bin inside of which there laid upturned teacups fixed to plastic spoons and stirrers, as well as a plastic knife and a toothbrush (see figure 33). Davies compared the opening mechanism to a piano lid, with the cutlery acting as the keys mechanism[55]. In 1975 Davies participated in the *New and Rediscovered Instruments* exhibition (henceforth NRI) at the Scottish National Gallery of Modern Art in Edinburgh. This exhibition represented a survey of work in the field of sound sculpture in the UK. Davies contributed his Springboards, the Tellybrella, Handscape, and the Telephone-Bell-Tree. The Tellybrella had already been included in the *Dorothy's Umbrellas* exhibition, and was an instrument amplified by the 'HiFi set' loudspeaker devised by Davies (see figures 34, 35).



Figure 28. HD Breadbins, (photograph: not known, HDA).

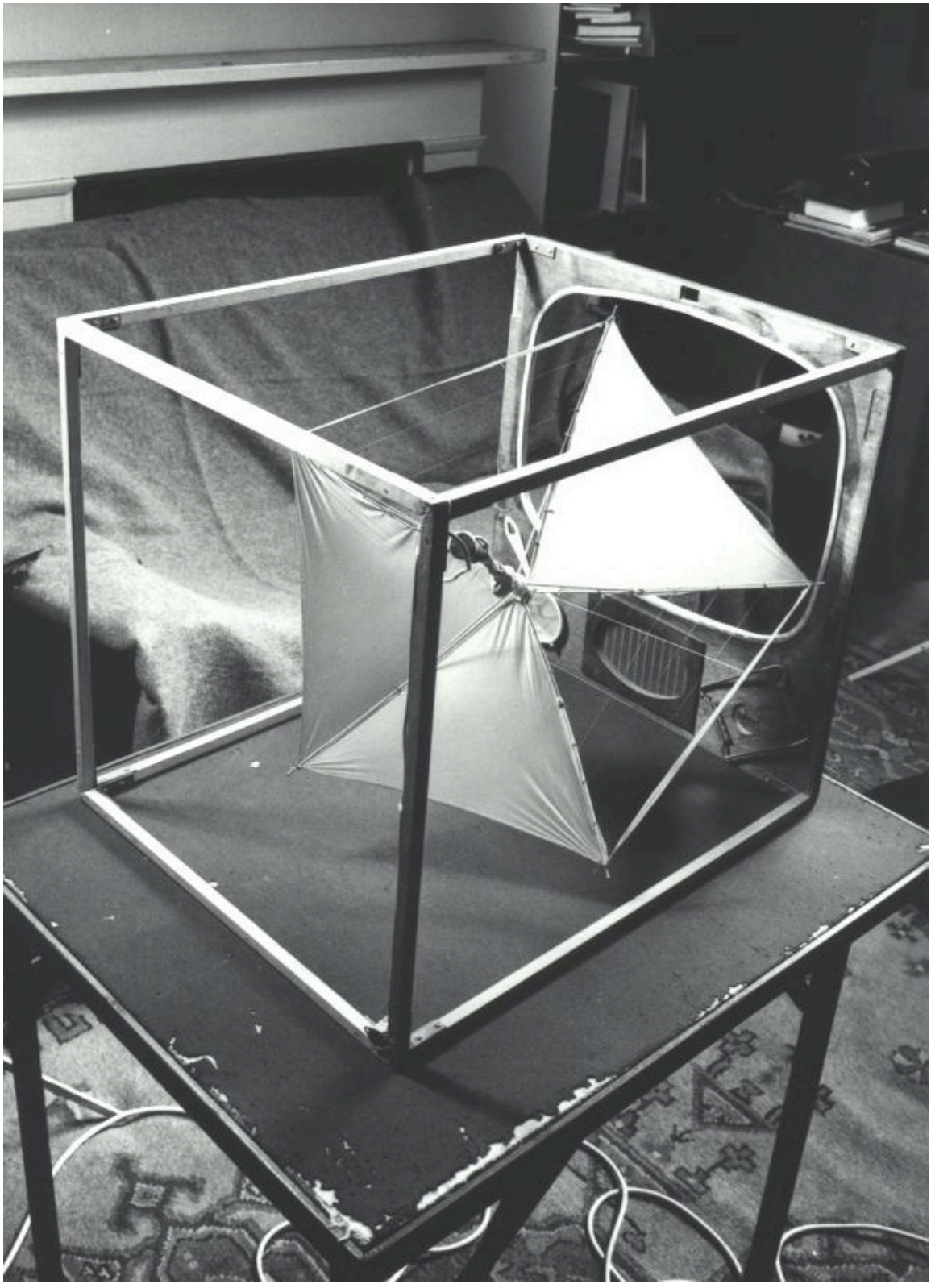


Figure 29. Tellybrella, (photograph: Michael Dunne, HDA).

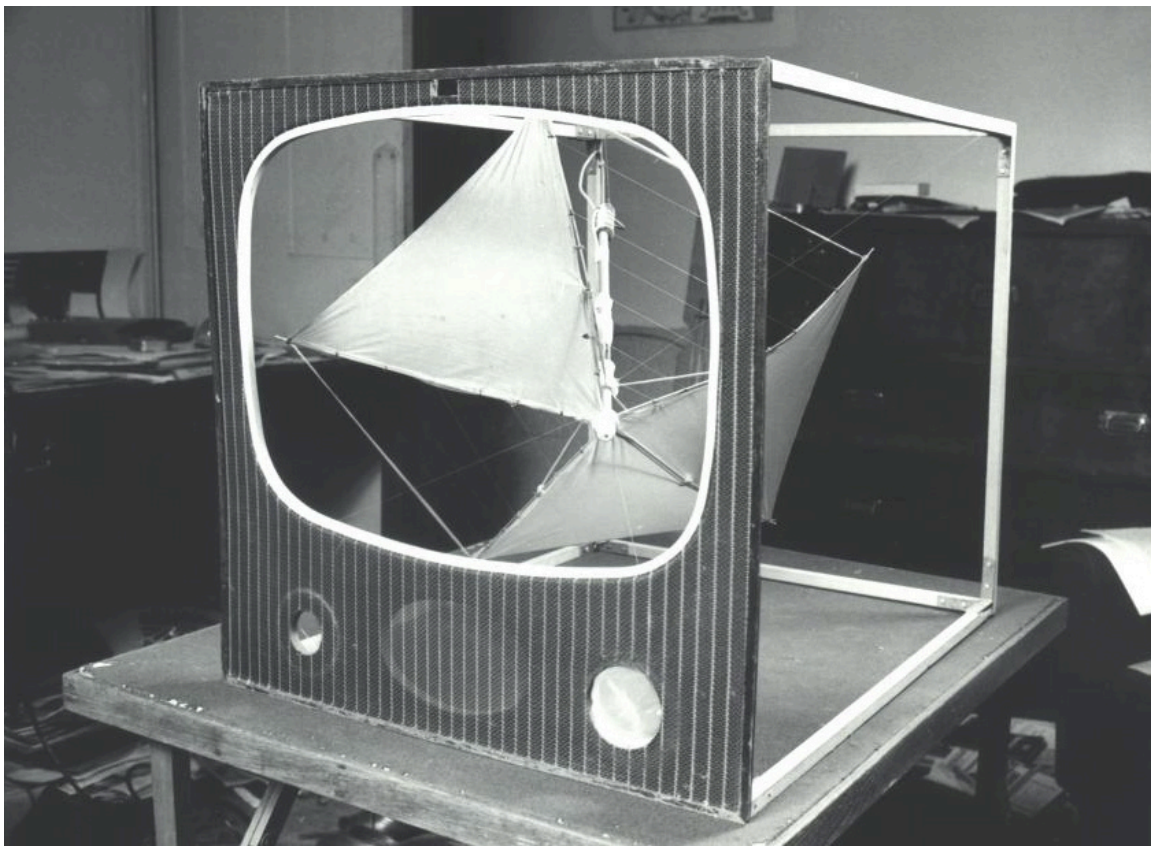


Figure 30. Tellybrella, (photograph: Michael Dunne, HDA).

Handscape consisted of a sphere representing a planet, which was covered with furniture casters arranged to form a landscape with mountains and valleys. The instrument was to offer a primarily tactile experience, as in the Feelie Boxes, and Davies also speculated about its possible use for therapeutic massage[56]. The Telephone-Bell-Tree-Jacket was an original prototype for a play, where three clowns would each have worn a jacket with different objects on them, as well as various other toy instruments and noisemakers in their pockets; the clowns would have performed all the music in the piece. At the exhibition Davies also exhibited the Mouth-in-the-Wind, an instrument that Davies said 'cannot be exhibited since you the visitor already possess it'[57] since, as discussed earlier, it consisted of a particular position in which to hold one's mouth against the wind in order to produce a sound[58]. Examples of other exhibits were Joanna Godliman's[59] Drum Belt, made of strong polythene film stretched tight over the ends of cardboard cylinders, to be worn and played by a dancer; Annea Lockwood's Black Umbrella, made with pendant bamboo rods; and Evan Parker's Heteroglottal Clarinet, which was modified from the original instrument of the Warrau tribe of Indians in South America. The exhibition also featured work by two artists whose practice, like Davies's, blurred the distinction between music and fine art: Max Eastley and David Toop; their work in this study is useful in understanding the broader historical, artistic, and social context in which Davies operated, and which is necessary to fully assess his work.

4.3.1. Max Eastley.

Eastley had graduated from Hornsey College of Art (later Middlesex Polytechnic and then Middlesex University) with a degree in sculpture in 1972. He contributed to the exhibition a number of sculptures, such as the Aeolian Tree Bows, the Metal and Elastic

Aerophonic Construction, and the untitled vertical construction. The Aeolian Tree Bows, constructed by Brian Patteson[60], were based on the principle of the Aeolian harp. The Bows were fixed some way above the ground, so as to increase the amount of wind that hit the strings. There was also a pair of Aeolian Bows resting on the ground, which were subject to different wind patterns than the Tree Bows. The strings could be tuned identically in the traditional manner of the Aeolian Harp, the strings being of different thicknesses and producing a harmonic series. The flatness of the wood offered resistance to the wind and caused the bows to flex, thus raising the pitch of the strings. The Metal and Elastic Aerophonic Construction was a trio of sculptures consisting in a metal construction supporting the elastic that was set to face the direction from which a strong wind was likely to blow. The trio was first made in this form in 1973, with three metal plates of different sizes and pitches. The metal plates were also made of different materials, two being of mild steel and one of copper. The sculpture also had tubes underneath each plate, which served as resonators. A Beaufort force 5 or 6 wind[61] could cause this work to sound like a huge flock of birds[62]. Eastley's untitled vertical structure, described as a musical instrument belonging to the Autometalophone category[63], was operated by a circular motion. This work consisted of twenty plates of aluminium each sounded by a rapid succession of beats from percussion beads. Eastley's work exemplified the conceptual proximity between building a musical instrument and realising a sound sculpture. As with Davies, his work could also be interpreted as a radical form of rejection of the traditional orchestral instrumentarium and soundworld. Indeed this work could be read as an extreme form of realising Cage's wish to abandon memory, psychology, and taste in music making as the instruments could be sounded by a non-human agent. Eastley thus understood his own work:

'I am a sculptor involved with sound and especially sound sculptures that produce music. My interior work has a dual aspect in its relationship to people; it can be seen as

an independently functioning three-dimensional object producing a sequence of sounds, for audience or onlooker, or as a musical instrument for performer. The outdoor instruments are of course not played by human, but by natural forces. There is only one role for the human being, that of listener and dictator who cannot dictate when the music will be heard. If you have travelled to see and hear these instruments and they should not be sounding, please realise that no one is to blame; it is beyond our control'[64].

4.3.2. David Toop.

David Toop (1949-) also presented various instruments and sound sculptures for the NRI. Toop had studied at Hornsey and Watford Colleges of Art, and was co-founder of Rain in the Face, a duo with Paul Burwell (1949-2007) active from 1969 to 1975. Toop was also founder of Quartz Publications (1973), a record label whose first LP releases included sacred flute music from New Guinea, and which demonstrated Toop's interest in non-Western forms of music. For the NRI Toop presented the Drumfi(sh)ddle, a barrel resonator on a stand with paper membrane and string, and the Deerbone Fiddle with Deerrib Bow, a rattle of dried leaves strung between the forks of a twig. He also exhibited the Shell Hat, whose instructions read 'stand (head) to fit hat (stones, shells and thread)'[65]. Toop also showed a large collection of flutes; among these were the Stoppen End-blow Flute without finger-holes and which had to be end-blown, the Whistle Bundle, which consisted in six whistles bound around a central stem, and the Hatched Demon Egg, made from papier maché and dead balloons. Toop had been working on many of the above instruments between 1970 and 1975 inspired from the material culture of indigenous people of the Amazon, New Guinea, and South Africa, while other ideas were derived from biological and ethnological phenomena. Indeed, Toop defined his work as no longer building instruments but as a 'study of alien communication'[66].

4.3.3. Reception.

Two reviews of the NRI exemplified the typical reaction to this kind of work: on one side some appreciated the humour and simplicity of these artifacts, on the other some were critical of their lack of specialized craft in making them. A *Time Out* reviewer suggested that this attitude was motivated by the lack of funding that this music enjoyed:

> 'Sharing the Back-to-the-Woods syndrome that the economics of the music business has forced into being, this collection of these back-of-the-envelope sketches ranges from sound producing gadgets to amuse yourself in the doctor's waiting room [the Feelie Boxes by Davies and Furnival part of the exhibition, Ed.] to a strange piece of lumber made from an exhaust manifold and a PA horn which several madmen can blow at once. Refreshingly, all these musicians perceive sound as being locked up in the substance of a multitude of everyday objects and materials...'[67].

Despite such positive appraisal, tracing the origin of this work in the difficult economic conditions of the time missed to acknowledge the aesthetic framework that allowed such solutions to be considered viable in the first place. In these works, everyday materials contrasted with the precious materials that had come to characterise the orchestral instrumentarium, in the same way that virtuosity had been rejected by adopting informal approaches to music making – or even by completely frustrating human agency in musical production.

Another reviewer unfavourably compared the exhibition to what was considered to be the 'renaissance of British musical craftsmanship'[68], allegedly represented in a show running at the Craft Centre in London at the same time. The accusation was that the contributors were 'less concerned with musical skills than with the idea of new and rediscovered instruments as a step to having new ideas about music', finally branding

the perceived statement that these pieces made about the domination of music by capitalist technology as 'propaganda'[69]. Despite its dismissive tone, the latter review highlighted the importance that these works placed on the modernist principle of novelty, while at the same time acknowledging the essentially political stance against the status quo that such practices pointed to.

4.3.4. The London Musicians Collective.

Some of the NRI artists participated in the establishment of The London Musicians Collective (henceforth LMC), an organisation formed in London in 1975. It followed the founding of the Musicians' Cooperative by Derek Bailey, Evan Parker, and Tony Oxley among others in 1971, which had the intent of promoting their work and securing grants from local arts councils, and the setting up of *Musics* in 1975, a publication devoted to improvised music. The motivation behind the genesis of LMC was to develop a network for artists who worked with experimental music forms and therefore lacked the support of established clubs, and to obtain funding. The LMC offered a platform to artists who refused to follow commercial imperatives. Among the founding members were Davies, Toop, Paul Burwell, and Philip Wachsmann (1944-). The LMC initially received a small amount of funding from what was at that time known as the Arts Council of Great Britain. Although this did not allow them to cover administration costs, it allowed them towards the end of the 1970s to rent a place in Gloucester Avenue in Camden Town, London. This place – a former British Rail canteen – became the LMC home and their concert space for about a decade.

The music promoted by the LMC was influenced both by free jazz and experimental music. Free improvisation became the favoured practice of the LMC as it encompassed

a broad range of approaches and suited both the collective and non-hierarchical ideology of the organisation and the experimental project of research in sound. As the LMC events sought to overcome the boundaries of musical performance they often connected sound sculpture and performance art. For instance Eastley's Aeolian harps were installed for a period of time above the entrance of the Gloucester Avenue place, while the artist and filmmaker Annabel Nicolson (1946-) of the London Film-Makers Cooperative organised an event in which the place was flooded to represent a river. The LMC offered Davies a forum in which to pursue and exchange ideas, as well as opportunities for an audience to access his work. Notable ventures that took place under the LMC aegis, which were particularly relevant to Davies's work, were the Festival of Environmental Music, a nine days event organised by Toop in 1978 and the New Instruments New Music Festival organised by Sylvia Hallett (1953-) and Burwell in 1984.

Membership of the LMC was open and indeed the organisation structure was founded on the collective ethos and inclusiveness ideal that held currency in the politicised environment of music in the 1970s, as demonstrated by the Scratch Orchestra. The diversity of the members' background allowed for musical exchange, adventurous programming, and lively activities. It was also the cause of factional in-fighting and on-going debates which highlighted the contradictions of an organisation that grouped anti-establishment artists. The LMC organisation underwent a series of considerable changes over the years until its effective demise in 2008 due to funding cuts. However its legacy is still evident in the work of Resonance FM, the first radio art station in the UK launched in 2001 by the LMC and still operating today.

4.3.4. Waisvisz and Bertoncini.

Outside of Britain there were a number of artists and composers who were realising work that was similar in spirit to the NRI artists and the LMC. Their works were also marked by a search for new sounds outside the conventions of the orchestral instrumentarium and outside the restrictions of the electronic music studio, often developing a common language between music and the Fine Arts; the Dutch composer and later director of the Studio for Electro Instrumental Music (henceforth STEIM) Michael Waisvisz (1949-2008), and the Italian composer Mario Bertoncini (1932-2011) were closest to Davies's sensibility.

Waisvisz shared the same antagonistic stance of Davies towards high-tech equipment. He started building instruments by directly operating the circuitry and interacting with them through touch, which resulted in the performer's body affecting the electrical current, an approach that is similar to the practice of circuit-bending today. Davies had also sought a tactile experience with his instruments, and in particular with the Feelie Boxes. The focus on haptics exhausted a need for a greater physical control of sound that overcame the boundaries of the restrictions that commercial products offered. Thus both Davies's and Waisvisz's work could be understood as offering an alternative to commercial synthesizers. One of Waisvisz's creations was the Crackle Box, which consisted in a wooden frame that enclosed battery operated oscillators that were extremely sensitive to the sense of touch. The concept of the Crackle Box later extended, with the support of STEIM, into an experimental music theatre piece where gestures performed on various household objects, such as using cutlery or pouring liquids in containers, and wired to the box's circuitry would alter the sound. Also, it was possible to affect the sound through human interaction, when physical contact occurred between performers who were touching the box with their fingers. So the performers'

bodies acted as potentiometers and capacitors. Waisvisz used a modified version of Davies's Springboards in his performances alongside the Crackle Box. In fact he recorded a performance on both instruments in *Crackle* (1978), a release on the Claxon label he founded in 1978.

Mario Bertoncini was a member of GINC from 1965 to 1973. Bertoncini, like Davies, also developed an interest in sound sculpture as an offshoot of his involvement in extended techniques and electronic music within a new music ensemble. Bertoncini realised works that featured the Aeolian harp, such as *Chanson pour instruments à vent* (1974) for Aeolian harps, gongs, and one performer, and *Vêle (Voiles, Toiles)* (1974) for three groups of Aeolian harps and three vocalists.

4.4. Practices in the visual arts.

4.4.1. Sound sculpture.

Sound sculpture, which could be considered as an extension of the practice of making new musical instruments, shared the discourse of experimental and electronic music by openly challenging the increasing standardisation of electronic music equipment and the mass production of synthesizers, favouring a handmade or conceptual approach in the building of instruments and in the devising of simple electronic circuits. Nonetheless, the BBC archivist and producer Madeau Stewart (1922-2006) who had a particular interest in early musical instruments stated:

> 'Once it was that musicians were composers as well as executants and, if not actual makers of instruments, at least in constant and critical touch with those craftsmen who did...Where isolated tribes used insects as buzzers attached to or trapped in some casually cut length of local wood, so the new instrument makers –who are also composers – casually adapt a clock string or an ex-army shell case as a sound maker'[70].

Similarly, despite the idiosyncrasy of his modus operandi and its political undertones, Davies did not necessarily see his work at building instruments as unconventional. He pointed out that the violin had originally consisted in bows made out of horse hair and strings made of catgut (sheep's intestines) and that although these materials might have seemed strange at first, centuries of development had significantly contributed to the greater sophistication of the instrument[71]. In the same way that the violin had evolved to use strings made of nylon[72], Davies believed his instruments could be further developed and that they had the potential to be integrated in a more conventional arena. On the other hand such sophistication to Davies was also achieved after a series of compromises, therefore somewhat preferring the more 'primitive' nature of his inventions as they allowed for the explorations of the possibilities of various principles. He claimed:

'That's something you don't get with traditional instruments, as it were a perfect version of it [sic], which of course is not perfect at all, but it's the most suitable one in terms of what the players want, what composers want, what is easier for manufacturers, cheaper to make…there are many more possibilities that are not explored at all in conventional instruments because the ideal version has been reached, whereas with each principle there are many possibilities. So if you take the oboe in the symphony orchestra, the sound is quite different from folk oboes from different parts of the world, or trumpets. So you can have wooden trumpets from Scandinavia, metal trumpets from Europe and animal horn trumpets from Africa and so on and so on – bamboo trumpets from other parts of the world, the Far East. They all have different sound qualities and I think that's something that inventors of new instruments look at a lot. We, perhaps unconsciously, for me it was originally unconscious and then I have rationalised it, in a sense I am saying for at least part of my music I don't want to use the instruments that are given to me, that are available. The problem with the instruments of the symphony orchestra, the piano, the organ, the classical Western instruments is that we think they've always been improved and nobody stops to say: "is it all positive, is there not a negative aspect? Can you only benefit, can you only gain? Surely you lose something"…So I think these sound qualities of new instruments are very important. I think that applies to a lot of the people who make new instruments, not everybody, but a large number of inventors that I've met and talked to would agree with me – to some extent any way – that's almost more important than anything else, that the instrument has interesting qualities, they don't have to be beautiful sounds, they can be ugly sounds, strong sounds, rough sounds, but they have vitality and they're unusual sounds. I could go anywhere in the world and go into a room and somebody who by chance might have one of my instruments that I wouldn't know about I would recognise it as being my instrument if I went in because there are only a limited number

of things you can do with the instrument. This is one of the things one accepts: that they are restricted; there are perhaps fewer sounds you can make with them than a conventional instrument because we haven't worked with any particular principle long enough compared with the hundreds of years it's taken to reach the violin or the piano…with many people contributing ideas in the development'[73].

Furthermore for Davies, technological developments were preceded by shifts in aesthetic pursuits. He saw the latter standing in causual connection with the former. For instance, he drew a parallel between the developments of the solo and ensemble instrumental genre in the seventeenth century and that of electro-acoustic and electronic music in the twentieth century. To Davies both genres were initially relegated to a subsidiary role, with the former traditionally used to fill in vocal parts, and the latter to transmit music for gramophone and radio, or to study acoustics. Davies said that in the seventeenth century with the development of tonality new instruments emerged, such as the violin and the clarinet. In the same way, in the twentieth century the development of non-tonality engendered the emergence of the synthesizer and the tape recorder. In both cases the instruments explored the possibilities that such developments in music had opened up[74].

4.4.2. The *objet trouvé*.

It could be argued that the use of everyday objects for musical purposes was at the origin of the development that resulted in the orchestral instrumentarium, and a return to their use in music was validated by non-tonal developments in Western art music of the twentieth century. However this did not mean that such a practice was widespread or accepted. Nonetheless, in the Fine Arts and literature of the twentieth century, the inclusion of an *object trouvé* had started becoming one of the most significant features of

modernity. Antoni Gaudí (1852-1926), for example, used broken pieces of pottery to cover exterior surfaces in the Park Güell buildings (1900–14). *Merzbau* (1923-36) by Kurt Schwitters (1887-1948) consisted in damaged, reclaimed, and recovered material, which featured in an installation at his house. From around 1912 Pablo Picasso (1881-1973) and Georges Braque (1882-1963) had started integrating in their paintings everyday utilitarian objects such as tickets and newspaper cuttings. For instance, Picasso pasted oil cloth to create *Guitar, Sheet Music and Glass* (1912). Similarly, Guillaume Apollinaire (1880-1918) incorporated fragments of conversations into his poems. The *objet trouvé*, thus, was differently employed according to the discipline and also acquired subtle variations in its purpose depending on the movement within which the work was realised. For instance, through the found object the Futurists sought to mediate the urbanisation and mechanisation that characterised the then current age. An example could be the onomatopoeic words that reproduced the sound of machine guns in *La Battaglia di Adrianopoli* (1924) by Filippo Tommaso Marinetti. As Gale argued, these practices seemed to offer a commentary on the relationship between reality, representation and illusion[75]. Indeed, they pointed to a blurring of the boundaries between art and life, by introducing 'reality fragments' into the artwork, and satisfying the modernist ideal of an art that dealt with the current times, while questioning accepted norms of artistic representation and signification.

4.4.3. Marcel Duchamp.

The most significant work in the *objet trouvé* tradition was by Duchamp, and in particular his readymades, manufactured ordinary objects that the artist selected for exhibition. The selection process often involved a minimal interference with the original object; the artist removed them from their functional context and could reposition, assemble, or

simply sign them. This process marked the conceptual value that selecting objects possessed over their material genesis. The term 'readymade' was borrowed from the clothing manufacture industry and stressed the immediacy with which these objects were appropriated. The readymades questioned the context of exhibition, critical criteria, and audience expectations while at the same time subverting the very concept of these forces. There were different kinds of readymade; for instance, the assisted readymades were thus called because the artist had made slight physical interventions to the object. Rectified readymades, on the other hand, were pieces made of objects with more elaborate changes; among these one could count *Bicycle Wheel* (1913), a bicycle wheel mounted by its fork on a stool. In the 'reciprocal' readymades, objects of art were used as utilitarian objects – for instance, a Rembrandt was to be used as an ironing board. *Fountain* (1917) was an assisted readymade, since its sole alteration consisted in reorienting and signing of the piece. The work consisted in an unplumbed urinal that Duchamp submitted under the pseudonym R. Mutt (Richard Mutt) for an exhibition organised by the Society of Independent Artists. The urinal was reoriented so that it laid at 90 degrees and placed on a pedestal, with no other alteration executed to the object. The submission caused controversy and ultimately led to its withdrawal from display. Nonetheless, the artwork sparked a discussion on the nature of art that would lead to a shift in emphasis in its practice during the twentieth century, especially in the second half of the century.

In an article titled 'The Richard Mutt case' and published in the May 1910 issue of the magazine *The Blindman*, edited by Duchamp and his friends Beatrice Wood (1893-1998) and Henri-Pierre Roche (1879-1959), an anonymous author – thought to be Wood – began the tradition of theoretical discussion of the readymades. The author launched an attack against the Society of Independent Artists board, accused of refusing to accept

Fountain because it was misunderstood as being vulgar and an act of plagiarism. The author stated that 'whether Mr. Mutt with his own hands made the fountain or not has no importance. He CHOSE it [author's emphasis, Ed.]. He took an ordinary article of life, placed it so that its useful significance disappeared under the new title and point of view - created a new thought for that object'[76]. I claim that the interpretation of the readymades as complex artworks that addressed aesthetic and political issues of the times holds good for Davies's instruments as well, and in particular for Shozyg I. Indeed like *Fountain*, Shozyg I had not been made by the manufacturers that actually built the objects it consisted of, but by 'the force of an imagination' as Norton claimed for *Fountain*[77]. Shozyg I, like the readymades, questioned its context, the ontology of an artwork, and audience expectations. Shozyg I accomplished this by adopting the framework of a musical instrument and its performance but at the same time destabilising the identity of these concepts. Shozyg I could indeed be considered rectified (musical) readymade, as the objects were mounted in certain purposeful configurations, with minimal alterations before being declared finished pieces. On the other hand an instrument like the Eggslicer could be said to be an assisted readymade, as there was no other interference at all with the object other than its amplification. Davies's work in incorporating found items is closer to the *objet trouvé* tradition in the Fine Arts than to the established musical tradition of borrowing, where fragments from other compositions may be incorporated in new pieces with varying degrees of modification, a practice that Davies employed in one of his compositions for traditional small ensemble (see chapter 6). Although borrowing enjoyed a resurgence in the post-war years amidst a developing postmodernist sensibility, its intentions were rather different than Davies's motivations in the incorporation of found objects in his instruments. The aim of works such as Berio's *Sinfonia* (1968-9), where more than one hundred quotations from works from the Baroque period until the 1960s were included,

was to reflect on the past musical tradition, to establish a perspective on it. Making reference to other musical pieces did not, however, transgress the musical boundaries in which the work was conceived. This was contrary to the intention of Davies, who sought to overcome the Philharmonic soundworld and bring about a collapse between art and life. As with Duchamp's readymades, Davies's inventions were experiments, understood in the same way in which Professor Judovitz considered *Fountain* not a product, but an experiment because of its active state[78]. For Judovitz the interest in the work lay in the speculation over the limits of conventional understanding of what art was. She said:

> 'As an art object, *Fountain,* provisionally hovers at the limits of art and nonart; its existence is purely conditional…The artistic value of *Fountain* in the age of mechanical reproduction is inseparable from this effort to conceive value in a dynamic, rather than a static sense…The value of *Fountain* no longer refers to a traditional concept of art, but instead to the conditions rendering inseparable the distinction between art and nonart…making it impossible to affirm the uniqueness of art without considering the possibility that at any moment it may revert into nonart'[79].

In Davies's inventions too, sound was treading the border between music and non-music and new music and everyday sounds. *Fountain* was compared to a Buddha or a Madonna[80] or a Cezanne's painting[81]. From these comparisons Norton raised an interesting point: could the artistic images which the urinal shape hinted at, in turn have reminded of less elevated works, whose very forms were present in everyday life, like a urinal?[82] The same issue could be raised with regards to the Shozygs. Indeed it could be possible that thanks to these inventions, the sounds produced by orchestral instruments could remind us of everyday sounds. Duchamp argued that at the time 'since the tubes of paint used by an artist are manufactured and ready made products we must conclude that all the paintings in the world are "readymade aided" and also works of assemblage'[83]. In the same manner orchestral musical instruments could be considered as much of an assemblage as the Shozygs, with their sounds already made. In fact in the

piano, for example, the pitches are established by the manufacture of the instrument, albeit in response to music history and culture.

In such an unstable relationship between art and non-art, music and non-music, the audience's reception became fundamental in the interpretation of the work. Indeed the listening experience that Davies's works offered was in constant balance between hearing a musical composition and mundane sounds. For Duchamp the creative act took 'another aspect when the spectator experiences the phenomenon of transmutation: through the change from inert matter into a work of art, an actual transubstantiation has taken place, and the role of the spectator is to determine the weight of the work on the esthetic scale'[84]. Furthermore for him each creative act possessed an 'art coefficient' that indicated the gap between what was the artist's intention in realising the work, and the actual result. For Duchamp not even the author of the artwork could be fully aware of this coefficient[85]. In his view this process was similar to that which the artist experienced in the moment of conceiving the work. Duchamp described the readymade as a sort of chance encounter, a *rendezvous* where the object chose the artist, as much as the artist chose the object[86]. Similarly, at times Davies relied on serendipity in finding the objects that would have been part of his inventions[87]. However despite their antagonistic quality, Duchamp's readymades did not challenge the hegemony of the gallery, which in fact validated these objects as art. Thus the focus on an object-oriented art that possessed institutional value had not been changed, in spite of the aesthetic shift that the readymades set in motion. The American philosopher George Dickie (1936-) took these circumstances as the premises from which to formulate what was called the Institutional Theory of Art, a theory that was variously criticised and also revised by its author. In its general form, Dickie defined art as that which satisfies two criteria: intervention by the artist, and consensus by representatives of the art institutions[88]. This

theory supported Duchamp's conceptualism and indeed Davies's work. Davies's claim that his inventions were musical instruments and their employment in musical activities, such as collective improvisations, validated these objects as such. In the same way that Duchamp proved that art could be made out of anything, so did Davies demonstrate that music could be produced by any sound source.

4.4.4. Fluxus.

Duchamp's work offered a paradigm for some of the assumptions and ideas that characterised art from the 1960s onwards. Indeed *Fountain* has been called a proto-conceptual artwork[89]. In 1968, at the time of Davies's realisation of the first Shozyg, conceptual art was establishing itself as the most culturally relevant art movement. The conceptual artist Douglas Huebler (1924-1997) famously stated in 1968 that 'the world is full of objects, more or less interesting; I do not wish to add any more'[90]. Conceptualism was also influential in England, especially in the work of Terry Atkinson (1939-), David Bainbrige (1941-), Michael Baldwin (1945-), and Harold Hurrel (1940-), who founded the Art & Language Press in 1968. Fluxus was one of the most prominent art movements to develop Duchamp's ideas, as well as embracing many of the experimental music concepts explored by Cage, such as for instance those that brought to the realisation of the 'happening', a performance art event which Cage had pioneered at Black Mountain College in North Carolina, US, in 1951. The happening as a largely improvised and intermedia event was the most representative expression of the Fluxus movement, which borrowed its name from the Latin *fluxus*, the past participle of the verb *fluere*, which means 'to flow'. Davies was very much influenced by the aesthetics of Fluxus. Particularly influential was Fluxus's principal aim to bring about the collapse of the boundary between art and life. In the happening everyday objects and everyday

actions would be staged as performances. The French Fluxus artist Ben Vautier (1935-) claimed in one of his text-paintings that 'l'art est pas art'[91]. In the same manner Davies with Shozyg I could be said to have made the radical claim that 'la musique est pas musique'. Fluxus was opposed to the traditional idea of what an artwork was as much as to any form of professionalism. In a letter he wrote to Nam June Paik (1932-2006) Davies revealed he had become acquainted with his work while they both lived in Cologne in the mid-sixties[92]. Paik was one of the main representatives of the Fluxus movement and had also participated in Stockhausen's *Originale* in 1961. In fact, the work of Paik, a classically trained pianist, seems relevant in further understanding the radicalism of Davies's work. In 1961 Paik realised *Urmusik*, which could be translated as 'primitive music' or 'primeval music'. This work consisted of a wooden crate that functioned as a resonance box. Strings were stretched across the top, and attached to the side was a rotatable tin with a ball rolling about inside it. Paik did not devise any particular composition or score for this instrument, it was free of technique, everyone was welcomed to play it as they liked. Paik's *Urmusik* appeared childlike, but its simplicity was polemical, repudiating the complexity of the complicated technology of modern musical instruments. Dieter called *Urmusik* Paik's Stradivari[93]. For Dieter by reversing the achievements of instrument makers and lutherie, Paik questioned their validity, their currency. *Urmusik* could be thus perceived to be a direct response to the domination of capitalist technology in music. Like Paik's *Urmusik* anyone could play Davies's instruments, as they required no particular skill. In fact Davies stated that the only virtuosity that was required with his instruments was that of the imagination (which echoed Norton's comments about *Fountain*). Davies's instruments represented a clear rejection of the notion of a necessarily professional music making. In building instruments made out of everyday objects that everyone could play and without specialised skills, Davies developed a radical critique of the music establishment

denouncing its inherent elitism. On the other hand it could be argued that the virtuosity of the imagination is still a kind of virtuosity. In this context Davies's preference of mental virtuosity could be construed as perpetrating the age-old dominion in Western culture of theory-mind-intellectualism over practice-body-physical labour. However as it will become apparent in the following chapter, when Davies's works for music theatre will be discussed, Davies rebelled against musical technical virtuosity because he believed that its stringent enforcement was stifling. Davies valued the tactile and 'hands-on' exploration of sound, what now might be called 'practice as research', as demonstrated by the instructions he devised for Shozyg I and II.

The requirement of non-professional skills set Davies's instruments apart from other famous instrument inventors such as Harry Partch, whose realisations required musicians to learn the skills to play them as well as reading the notation devised for them. Such situation dictated the long time of preparation for the performance of any of Partch's major works, which Peter Yates estimated to take an average of six months[94]. Not so with Shozyg I, which was ready-to-play.

Davies often made reference to works by Fluxus artists in his University lectures. A piece that Davies discussed with particular interest was *Micro 1* (1964) by Takehisa Kosugi (1938-). In this score Kosugi instructed to 'wrap a live microphone with a very large sheet of paper. Make a light bundle. Keep the microphone live for another 5 minutes'[95]. This piece, like Davies's instrument, was founded on the transformative powers that the microphone had in changing an everyday, often inaudible sound, into a concert sound, loud enough to be experienced by an audience. Nonetheless music did not necessarily have to be audible in Fluxus works, nor in Davies's. Often music was merely referenced, as for instance in La Monte Young's piece *Composition 1960 #5* (1960). In this piece, also known as 'the butterfly piece', the text-score instructed for

a butterfly, or a number of them, to be let free to fly in a performance space. The piece continued for as long as there was a butterfly in the space, and could be concluded by allowing it to fly outside a window or door[96]. As they moved the wings of a butterfly produced a sound, which couldn't be detected by human hearing. With this piece, which was music theatre as much as music properly speaking, Young seemed to pose the question of whether, if any common sound could become musical as Cage suggested with *4'33",* sounds that could be barely perceived (such as the flapping of the butterflies' wings), and without the help of amplification, could be considered to be music too.

4.5. *Music for Strings.*

Davies explored the possibility to experience music on a conceptual level in the three pieces that constituted *Music for Strings*, which were heavily influenced by the Fluxus movement. The scores for these pieces have never been published before and are part of the Hugh Davies Archive at the British Library. They read:

'*Music for Strings No.1* (Dartington August 1971). The performers enter together (number ad lib.) carrying solid violin/viola/cello/double bass cases (wood, fibreglass, etc.) They unpack them. Inside each case, instead of the normal instrument, is a tightly packed collection of miscellaneous rubbish – newspaper, crumpled musical scores, rotten fruit, empty bottles and tin cans, possible more distasteful items such as entrails. Each performer leaves the stage, carrying his case, when he has completely emptied it.

Music for Strings No.2 (Dartington August 1971). During the first half of the concert, string instruments (violins, violas, cellos, double basses) are piled up in a reasonably ordered fashion in a large heap outside the hall. Where they can be best observed from a distance – e.g. in the middle by a grass area near or around which the audience will walk during the interval. No performers are required. The instruments are removed during the second half of the concert.

Music for Strings No.3 (Dartington August 1971). Based on an idea by Graham Hearn. 10 violins, 6 violas, 4 cellos, 2 double basses, 1 swimming pool (full of water). The instruments are placed, on their backs, on top of the water so that they float, and are arranged in the formation of two football teams, with the violins as the forwards, the

violas as the halves, the cellos as the backs and the double basses as the goalkeepers. The fingerboards should point to the rear of each "player". The swimming pool should be large enough for the layout of the instruments to be clear to spectators, with enough space between the rows and particularly between the two teams. No instrument should be in so bad a condition that it will sink. Leave on display for as long as required. Alternate version (suggested by Graham Hearn). For a windy day: place a lightweight rubber ball in the centre of the pool. The piece is over when one team scores a goal (anywhere along the width of the pool). No human intervention is to take place'[97].

These three pieces followed in the tradition of Fluxus text pieces that scored actions carried out by the performers, or not carried out – where performers were either absent or non-functional. These works were conceptual because the music they referred to, such as the music produced by a string ensemble, was never performed, although still functioned as a reference point. In the same way that conceptual works sought to achieve the dematerialisation of the artwork, in this case Davies achieved the de-sonorisation of music. In *Music for Strings No.1* the items collected in the instruments' case were mainly discarded objects, an idea that had been central to Davies's work as an instrument inventor, and more evidently in the Shozygs. Such common materials were also favoured by Fluxus artists, for instance the sheet of paper used by Kosugi in *Micro 1*. In Davies's music for strings, as in Fluxus pieces, the nineteenth century understanding of the work of art as a 'precious', eternal object was questioned. Particularly significant in this respect was the inclusion of food such as rotten fruit as an art material in *Music for Strings No. 1*, a material that was also widely used in Fluxus pieces. Indeed, food was a potent symbol of the ephemerality and impermanence of the artwork. In Davies's case, rotten fruit takes on also a symbolic valence that seemed to reference his perception of the Western art music ideal as corrupted, decayed. Also relevant in this context were the 'distasteful items' listed, which contravened the notion of music as the pursuit of a pleasant aesthetic experience. Furthermore, on a conceptual level, a case full of sound and sound sources could be a naïve or crude description of a musical instrument. Davies had indeed played with the concept of a musical instrument

by imitating the mechanism of a piano in his HD Breadbins. The encasement of sound or sounding objects described in *Music for Strings No. 1,* as in the various Shozygs, seemed also to point to a reflection on the aural potential of a musical instrument, whose body is impregnated with numerous and different acoustic potentialities. In Schaeffer's *Tableau Récapitulatif de la Typologie* (TARTYP), sounds were organised according to their morphology rather than their sources, which implied the possibility of the same sound source to produce sounds belonging to different families[98]. With this regard, the objects listed in *Music for Strings No.1*, such as bottles (glass) cans (metal) and scores (paper), all seem to refer to certain timbres and musical qualities of sound.

The lack of any specific instruction to produce an acoustic event can be interpreted as a statement against the traditional notion of music. Although non-intentional sounds may have occurred when handling 'crumpled musical scores' and newspapers in *Music for Strings No.1*, or when the instruments collided while floating in the pool in *Music for Strings No.3*, in none of these three pieces is sound intentionally produced. These can be considered to be an extreme form of the non-intentionality promoted by Cage's work. Because of such circumstances, the performers did not need to be musicians.

In *Commentary* Davies specified that he would have preferred musicians with a background in dramatic arts, rather than actors with a knowledge of music (see chapter 4). Nonetheless in the *Music for Strings* pieces, theatricality seemed a prominent element. For instance, staging the entrance of the performers bearing their locked cases in *Music for Strings No.1*, points to an orchestrated subversion of expectations, which clearly aimed at a *coup de theâtre*. *Music for Strings No.2* featured no performers and, although action was implied ('string instruments are piled up in a reasonably ordered fashion', 'the instruments are removed'), this might have occurred outside the performance time, or it might have not occurred at all, since a conceptual piece such as this could be more

to do with language than an actual physical realisation of the score. Indeed, there are no records of these instructions having ever been performed.

In *Music for Strings No.3* the duration was undetermined, especially in the alternate version, where the conclusion depended on the inestimable time when the ball would have reached a side of the pool. The uncertainty about how long a piece could have lasted would have greatly increased the sense of discomfort by the audience, a reaction that Davies could have easily predicted, and perhaps even sought. Such disruption was often favoured in Fluxus performances. For instance, in Young's *Composition 1960 #5* the piece's duration depended on the incalculable event of the last butterfly leaving the room. This strategy seemed to question the understanding of art as a commodity, threatening its status as a consumable product that befitted the bourgeois predilection for leisurely activities.

In his *Music for Strings* pieces, Davies relinquished the traditional role of a music composer, in the same manner that Luc Ferrari (1929-2005) had in his text pieces, acting rather as a *réalisateur*[99]. Indeed, in *Music for Strings No.3,* Davies was close to Ferrari's idea of the composer as a game leader, able to engage the audience in spite of their different backgrounds and skills[100]. This attitude could be associated to the Fluxus's predilection of ludic activities, which represented another stab at 'serious' art. Nonetheless, although in each of these pieces music was commented, meditated upon, critiqued, and barely performed in the conventional sense, it would be a mistake to underestimate the value that tradition still retained. As in Cage's *4'33"*, despite the clear challenge to the Western art musical tradition, the means used (such as the score) still unequivocally pointed to a Euro-centric historical practice. In the same manner, for these three pieces to be effective, an idea of music had to be already formed in the audience's mind, for their transgression to be understood. Therefore, it is arguable

whether the experience of Davies's *Music for Strings* would be as satisfying as in those acquainted with the music tradition that these pieces referenced. This issue highlighted the still central role played by the past in the aesthetics of such work, which will be more closely dealt with in discussing Davies's pieces for small traditional ensembles in the next chapter.

5. Environmental projects and works for traditional ensemble.

In this chapter I will investigate the development of Davies's work in inventing new musical instruments and in pursuing live electronics with regards to his environmental projects and works for small traditional ensembles. I will claim that there are underlying concerns that connect all of these works, which can be linked to an experimental music aesthetic. I will begin by discussing Davies's ontological understanding of a musical instrument, a sound sculpture, and installation. This will help the tracing of a relationship between his work in building instruments and his environmental projects. I will then be concerned with Davies's environmental aesthetics and ethics at length as these constituted a fundamental feature of his work, mediating the politics of the time and thus responding to the modernist ethos of developing a music that dealt with the historical present. Finally I will analyse Davies's music theatre pieces and works for small traditional orchestral ensemble, where a distinct experimental attitude can be detected in their compositional techniques and performance dramatisation.

5.1. Invented instruments and installations.

As mentioned in chapter 5 Davies began developing interactive installations extending the principle of attaching a fishing nylon string to various objects, which he had employed in his 1974 instrument Lady Bracknell (see chapter 5). This instrument eventually acquired the conceptual standing of an installation, more aptly described by Davies as a 'room harp' that the audience could perform on[1]. The genesis of an installation in an invented instrument suggests a relationship between the two whose boundaries were not precisely defined by Davies. It could be said that for Davies the

distinction between an invented instrument, a sound sculpture, and an installation did not depend on intrinsic characteristics of the work but rather on the type of interaction it required. Since the mode of interaction could change depending on the circumstances the identity of a piece was fluid. Thus, while an instrument was defined by its use performance by a player, a piece of sound sculpture was determined by its activation by natural elements like the wind (the Aeolian harp was one such example). An installation, on the other hand, was distinguished by its collective use by an audience. Examples of the porosity between these types of identities are the Springboards, which have been discussed in chapter 5. The Springboards were used by Davies in a concert situation, most notably in the performance of Stockhausen's *Sternklang* with Gentle Fire (see chapter 4). Later members of the Springboards, however, as well as fulfilling this concert role, were also displayed as sound installations to be activated by the audience. Indeed the Springboards used in the *SHO-ZYG* exhibition (see appendix 2) presented hooks on their back that allowed them to be hung on gallery walls (see figure 36).

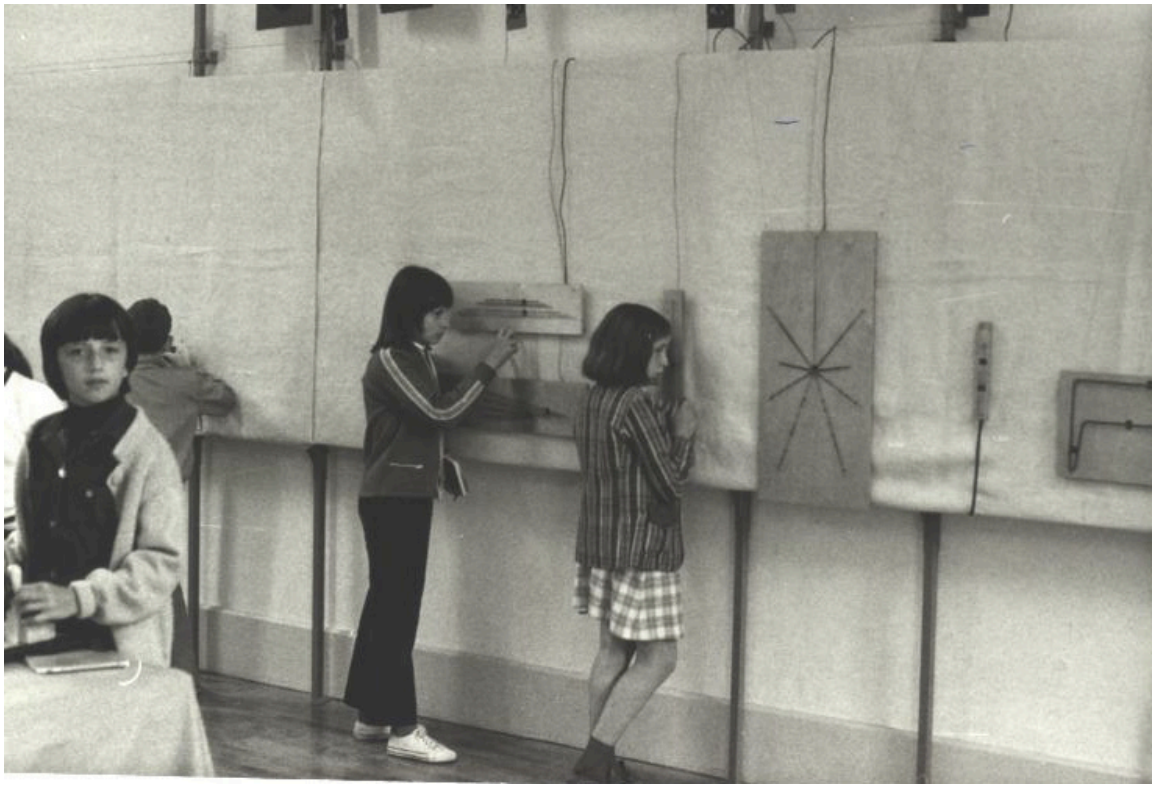


Figure 31. Exhibition of Davies's Springboards to be performed by an audience in Bourges, France, 1976, (photograph: Chris Warren, HDA).



Figure 32. Davies's Shozip (see chapter 5) used as an exhibition piece to be performed by an audience in Bourges, France, 1976, (photograph: Chris Warren, HDA).

5.1.1. *Music for Bowed Diaphragms.*

Music for Bowed Diaphragms (1973) for solo performer further demonstrated Davies's fluid understanding of the ontology of his works. This piece used the diaphragms that existed in some magnetic pickups as a sound source. The pickups could be found in a variety of objects, such as old telephones earpieces, old military microphones and headphones, electric guitar pickups, etc. Davies used five different magnetic pickups and five horsehair 'bows'. The bows consisted of between six and eight horse hairs salvaged from broken violin bows. Playing was accomplished by moving the hair, held between the hands, on various positions against the diaphragm. Various movements were possible, such as across, along, around, and in between the diaphragms and the microphone. The diaphragm could be damped to alter loudness, pitch and timbre, and the tension of the hair could be varied. The string itself could be plucked, which Davies considered to be a paradox, because 'while the bow-hair travels across the edge of the diaphragm, it is a bow moving across an "instrument" that is "built into" the microphone; but if one then plucks the hair while it is still moving, it also becomes a string that is amplified by a microphone'[2]. Although acknowledging the instrumental implications that the setup for this work entailed, in the score, Davies explicitly called this an installation[3], rather than an instrument. Davies did not explain why this should be so, but I suggest that one of the reasons he might have come to such an understanding of this work could have been its open nature: anyone could have played these diaphragms, which, like the Shozygs, required no specialised skills. The deliberate non-professionalism of his inventions thus opened up the possibility for them to be performed by an audience hence achieving the ideal of inclusion that had been theorised by Bertolt Brecht in his theatre as well as Comte de Lautréamont in poetry (see chapter 1). It is unclear whether at this point Davies considered the Shozyg also an

installation, although he had exhibited some of the Shozygs in gallery shows in the mid-1970s (see figure 37). The explicit encouragement in the score to participate in the playing of the bowed diaphragms suggested this was a key element in his characterisation of an installation[4]. Thus, while *Music for Bowed Diaphragms* might be considered no different than Davies's earlier inventions, it signalled a new framework within which he assessed his own work. The relationship that these pieces had with Fine Art practices was confirmed in Davies's feelings of greater kinship with visual artists rather than musicians[5]. Indeed many of those with whom he collaborated during the early '70s, such as Furnival, Toop, and Eastley, had an art background, rather than a classical musical education as he did. Such sentiments were broadly shared by other contemporaries of Davies, who often performed in art galleries rather than concert halls, or came to music after studying at art colleges. For instance, the group AMM were originally formed around a workshop at the Royal College of Art, and one of its members (Keith Rowe) had studied painting. Exhibiting in galleries presented architectural possibilities that were unavailable (perhaps more conceptually than physically) in the concert hall, as they allowed Davies to pursue further some of the objectives he had pursued with his invented instruments. For instance, the accessibility of music to a greater number of people and the active participation in the music making process that his invented instruments afforded were fundamental features in his work for the gallery. Between 1973 and 1974, a period when he was involved in art exhibitions like *Dorothy's Umbrella* and *New and Rediscovered Instruments*, Davies begun developing work that was increasingly more conscious of its situation outside the concert hall context. This activity was important in opening up the possibility to develop work that was more aware of the surrounding environment and that sought to include environmental elements in its soundworld. According to the artist and curator José Iges, the distinguishing characteristic of a sound installation, other than interaction,

was the specific intent to include the sound of the place in which the work were situated[6], this, however, might not always prove to be the case.

5.2. Music, nature, and society.

As mentioned in the previous chapter, inventing instruments was a response to a number of aesthetic demands that Davies sought to answer. Building new musical instruments represented a way to pursue the experimental music project, it offered an escape route from the ivory tower of the electronic music studio, and a way to develop a music that was more accessible to people. However there is a further layer to add in the interpretation of Davies's devices, which concerns the underlying ethical relationship with the environment that his practice involved, an environmental activism that played out in different forms in the creative process. For instance with his instruments Davies developed a critique against the consumerism that characterised society. This attack was articulated by demonstrating how something as precious as music could be produced by items that were considered no longer useful. With many of his new musical instruments Davies could be said to have pursued a sustainable form of music making, the act of recycling becoming an ethical imperative. Davies's instruments thus pointed to a growing awareness of the social and political environment in which they originated.

5.2.1. Environmentalism.

The concern with the context in which sound took place could be considered as an extension of the social concern that underlined Davies's works. It is indeed in his quest

of bringing the surrounding environment into his own work that a continuity in Davies's output could be found. Starting with the building of Shozyg I, Davies demonstrated a commitment to drawing elements from the environment in his pieces by selecting everyday objects or discarded materials gathered from his immediate surroundings. It should come as no surprise, therefore, that Davies's work further developed a strong environmental ethic. This concern was momentous, as the environmental movement was gaining resonance towards the end of the 1960s and the beginning of the 1970s. Several works had prepared the ground for this occurrence. In the nineteenth century the biologist and philosopher Ernst Haeckel (1834-1919) had formulated the concept of ecology as the social and biological interconnection of organisms to form an integrated system with their environment. In the twentieth century the philosophical and political scope of environmentalism was greatly expanded by the American forester Aldo Leopold's (1887-1948) 'The land ethic' (1949). In this essay Leopold argued in favour of extending the same kind of respect that was in principle granted to other human beings to the 'biotic community' (animals and the environment) as a moral duty[7]. The Australian philosopher Richard Routley (1935-1996) further developed this principle in his 'last man' argument, which sought to confer intrinsic value to natural objects[8]. In the 1960s and 1970s a series of publications raised awareness about the relationship and impact that humans had with their environment, for example *The Silent Spring* (1962) by Rachel Carson (1907-1964) and *The Population Bomb* (1968) by Paul Ehrlich (1932-). While Carson brought to attention the relationship between environmental issues and public health by revealing the harmful effect of pesticides in the food chain, Ehrlich exposed the threat that population growth posed for the ecosystem. These works, along with movements like the 'deep ecology' begun by the Norwegian philosopher and climber Arne Næss (1912-2009) accentuated the sense of crisis and urgency in dealing with issues concerning the environment.

5.2.2. Music and ethics.

That music should become invested with the environmentalist discourse rehearsed at the time seems to be the result of a typical modernist attitude. I claim that it was indeed the end of a transcendental notion of beauty and the consequent historical immanence of art that created the grounds for the validation of environmental ethics as a viable aesthetic pursuit. From this respect, Davies seemed to have adopted environmentalism (deliberately or not) as a guiding historicist undercurrent to his work, in the same manner that Daphne Oram embraced a technological positivism and Cornelius Cardew a secular, political utopianism. In fact, the decline of the belief in eternal truths, whether they be moral truths or aesthetic truths – as discussed by Friedrich Nietzsche (1844-1900) and Theodor Adorno amongst others – and the awareness of complex economic and psychological realities, in the writings of Karl Marx (1818-1883) and Sigmund Freud (1856-1939) respectively, opened up the ground for other strategies with which to make sense of the empirical world, and as a consequence of the musical soundworld as well. With this in mind, the musical pursuits of Davies, Oram, and Cardew could be interpreted as mediating the search for a paradise on Earth, rather than in an afterlife. For Davies this could have been achieved by respecting the eco-system, while for Oram it was possible through the advances in technology, by overcoming the natural limitations of mankind; for Cardew, this could be achieved with a radical reorganisation of society.

5.2.3. Music and nature.

Nonetheless, environmental ethics in Davies's work was not simply a 'cause' that gave meaning to a music that was still in mourning for the loss of an all-ordering principle,

whether religious or musical (as in the case of tonality). There was also an aesthetic aspect that informed such an approach.

The geographer Ronald Rees argued that the concern with the state of the 'natural' environment in the century was a result of the touristic phenomenon that had arose around the idea of the picturesque, rooted in the eighteenth century aesthetics of nature[9]. According to Immanuel Kant (1724-1804) nature held the most prominent position as the object of aesthetic appreciation, even standing above art. Furthermore a mode of disinterestedness pertained to such an aesthetic experience. Thus, for Kant nature was to serve no personal interest to the observer, but enjoyed for its inherent qualities[10]. Such theories were influential for the development of the idea of the picturesque, or the capacity of nature to resemble works of art, and the aesthetic experience it offered the contemplators. This idea was fundamental for the development of the environmental attitude described in the writings of the American philosopher, poet, and environmental scientist Henry David Thoreau (1817–1862). Thoreau advocated an immersion in nature, and the exercise of a particular kind of awareness that opened up the possibility to appreciate its beauty, an attitude that necessitated the abandoning of a limited perspective. For instance, for Thoreau, rain was not to be solely considered to be a hindrance to humankind, but had to be appreciated for its purpose within the ecosystem[11]. This understanding is significant as it marked a shift from an anthropocentric view of the world to a biocentric position. Such a shift was only implied by the norms of the Kantian aesthetic appreciation, which were nonetheless crucial in opening up a discourse in environmentalism that questioned the perceived central role of human beings in the ecosystem. According to the Professor Lynn White Jr. (1907-1987) it was indeed the anthropocentrism inherited by the Judeo-Christian faith that was at the origins of the ravages of nature by the hands of

humankind. White identified the belief that human beings were put on earth by a god to use its resources as the cause of the environmental crisis that the world was facing[12]. White's critique supports the thesis that Davies's concern with the environment in his work could have originated in the increasing secular beliefs that characterised the cultural milieu of the second half of the twentieth century. Also, the weakening of anthropocentric views of the world offers a philosophical corollary to the activities in sound sculpture, as described by Max Eastley as characterising works that were activated by natural forces, and thus which assigned human agency a receptive role rather than a productive one (see chapter 5). Thoreau's influence was explicitly acknowledged by John Cage, presenting a further confirmation of the connection between the philosophy of the environment and the aesthetics of experimental music. For example, in 1975 Cage based his piece *Lecture on Weather* on Thoreau's writings, and in an introduction to its broadcast he said: 'I have wanted in this work to give another opportunity for us, whether of one nation or another, to examine again, as Thoreau continually did, ourselves, both as individuals and as members of society, and the world in which we live'[13]. Like Thoreau, Cage advocated listening to sounds as they happened in the environment, rather than manipulating them to fit 'man-made theories', seeking to experience them 'as they were'[14]. Such theories of composition and listening (which, to some extent, can be said to coincide here) represented an extreme consequence of the Kantian disinterested aesthetic experience. In fact, disinterestedness in Cage became conscious abandonment of the traditional musical purposeful action, which was frustrated in favour of the experience of the everyday as art. Cage said: 'do you agree with this statement: After all, nature is better than art? Where does beauty begin and where does it end? Where it ends, is where the artist begins'[15]. Thus, in Cage's theory of aesthetics, Kant's approach towards nature is interpreted as a critique of the art establishment. Some of Cage's words are echoed in Davies. For instance, the idea of

'letting sounds be themselves' resonated in the performance instructions that Davies gave for the Shozygs, where the goal was to fulfil the instrument's aural potential (see chapter 5). This notion subordinated the composer and the performer as mere *réalisateur* of the acoustic event, thus effectively divesting them from their task of expressing subjectivity in music. Consequently, freed from the intentionality that an anthropocentric view of music implied, the evaluation of sounds was further disengaged from its dependence on originating by a genius or as capable of affecting our feelings. Since for Cage there existed no hierarchy organising orchestral sounds and everyday sounds, it was therefore possible to develop works that not only integrated environmental sounds in the concert hall, as he had done in *4'33"*, but that also extended the listening environment of the concert hall to the outside environment.

5.3. Environmental projects.

According to Cage technology had opened the doors to nature[16]. Indeed Cage had come to integrate environmental sounds thanks to the experience that a technology such as that of the anechoic chamber afforded him. Davies had also used a technology (that of electronic amplification) to reveal sound produced by everyday objects found in the surrounding environment. Electronic technology also informed Davies's work on a conceptual level. In fact it is possible to trace a particular approach in the realisation of his pieces that feature environmental aspects, even when no electronic technology was involved in the process at all. In those instances electronic technology served more as a framework for his approach, a condition that would also apply to his music theatre pieces discussed later in this chapter.

5.3.1. The *Meldoci Gestures* pieces.

Electronic technology mediated the relationship between natural sounds and orchestral sounds in Davies's works for traditional ensemble such as *Meldoci Gestures* (1978) for piano, bass flute, and alto flute (or violin) and *Meldoci Gestures from the British Isles* (1979) for flute and tuba (or bass trombone or double bass). The title 'Meldoci Gestures' was a found title from a nineteenth century musical journal misprint, which described the melodic gestures of birdsong and animal cries. Davies readily adopted this printing error as a serendipitous way to indicate the melodic permutations and variations that were a major feature of his compositions. In these pieces Davies adopted an approach à la Messiaen, but using recording technology. Olivier Messiaen had transcribed birdsong by writing it down, while Davies recorded various wildlife songs on tape. Davies subsequently played them back at different speeds, up to sixteen times faster or slower than the normal speed, thus changing the pitch up to four octaves higher or lower. This procedure was done in order to bring the sounds into the range of human music in both pitch and tempo. These were then transcribed for traditional instruments and arranged into a musical structure for an instrumental trio. In these pieces animals from different continents were included (see table 2).

Meldoci Gestures from the British Isles was a companion piece and a sequel to the *Meldoci Gestures* trio. The piece was composed to rectify the unintentional omission of British wildlife in the previous composition. In this piece the speed change factor reached 64 times the original recording. The sources used were: willow warbler, great Northern diver, suburban bird, midwife and common toad, goldcrest, skylark, young and adult badger, pygmy shrew, and grey seal[17]. In the arrangements Davies preferred the unusual choice of a tuba to play birdsongs, rather than the more obvious flute[18]. In this composition, Davies explicitly acknowledged the influence of Cage by quoting the

American composer on the score and claiming that 'our Western music is mostly full of intent, relating past, present, and future, while the music of the animal world has little concern for purposeful long-term aims, and remains strongly in the immediate present, while never becoming static'[19]. Davies, conscious of the aesthetic imperatives of experimental music, might have found in wildlife songs a way to avoid memory, psychology, and taste. However, since animal song cannot be considered to lack intention, and the notion of a 'music of the animal world' must be acknowledged as a cultural construct, it is clear that both Cage and Davies's main aim was to forego human intention, thus revealing a desire to further frustrate an anthropocentric attitude in music making.

Table 2. *Meldoci Gestures*, scores, HDA.

Meldoci Gestures Analysis				
			Approximate transpositions	
Time	Song	Instrument	Lower (octaves)	Slower (times)
0'00"-1'15"	A single wolf	Violin	2	4
1'15"-2'25"	A choir of wolves	Violin	1	2
2'25"-2'45"	A single Bottle-nose Dolphin	Violin	3	8
3'05-4'50"	Screech Owls	Piano	2	4
	Humpback Whale	Bass flute and violin		
4'50"-5'10"	Blue Whale	Piano	4 octaves higher	16 times faster
5'05"-5'30"	Winter Wren, USA	Flute	2 octaves lower	4 times slower
5'25"-6'05"	Bell Miner, Australia	Piano	2	4
5'30"-6'30"	White-throated Sparrow, USA	Flute	2	4
	Bottle-nose Dolphin	Bass flute	2	4
6'05"-6'50"	Crimson Rossella, Australia		2	4
6'50"-7'10"	Western Meadowlark, USA	Bass flute	2	4
7'05"-7'35"	Frogs (a paraphrase more than a transcription)	Piano and violin	4	16
7'35"-8'50"	Evocation of the mixture of Bell Miners you hear Sunday morning in central Amsterdam, using the heights of Wolf Song with which the work opens with superimposed rhythms derived from the Blue Whale, frogs, etc.	Violin (rhythm and heights)	Various	Various

5.3.2. *Natural Images*.

In the *Meldoci Gestures* works the employment of electronic technology allowed Davies to build a bridge between wildlife song sources and music. The use of electronic technology also allowed for a blurring of the aural boundaries between different environments in Davies's piece *Natural Images* for amplified objects and tape. The piece was based on a dance workshop session that Davies conducted with the choreographer Royston Maldoom (1943-). Maldoom and Davies collaborated in the performance of Davies's own amplified instruments as well as on natural acoustic objects, such as stones and pebbles; Davies also contributed a section of the choreography. Both music and dance sought to describe the same events, which described animal and plant life. The wildlife and the natural scenes portrayed in the piece were: egg hatching; a deer alerted by the sound of two stones struck together; plant growth; seeds blown in the wind; frigate birds; baby turtle; bats; whales; bees' mating dance; wolves; and stones[20]. In 1976 Maldoom and Davies recorded the music on tape as part of a commission by the EMMA Dance Company, which toured with the work. In the recorded piece Davies realised a version that went beyond what had been possible to achieve in the live performance, transforming the sound material with studio processing techniques. These techniques allowed for the use of sound sources that could be either recordings from the real world, or synthesized. Indeed, Davies sought to evoke wildlife and environmental sounds using unlikely sound sources. For instance, a whale song was obtained by slowing down and processing the sound of a squeaking plastic breadbin lid. The same procedures were applied to doll squeakers to recall the sound of wolves snarling, and a train whistle to resemble their singing[21]. *Natural Images* was subsequently further revised after Davies's first whale-watching trip, on the occasion of his concert at the Sound Symposium in Newfoundland in 1992. Davies integrated and extended the

original live version with the tape version, using some of the sound sources on which the tape was based, a procedure he had also adopted in 1989 with his other tape piece for dance *Tapestries* (1982). In *Natural Images* the use of electronic processing techniques was crucial in establishing a complex relationship with the environment. In fact in *Natural Images* a 'natural' sound was the result of the electronic processing of a sound source that belonged to the everyday industrialised urban sphere.

5.3.3. The Sounds Heard.

Electronic technology also inspired an approach that required no electronic equipment at all. Starting in 1974, Davies engaged in annotating 'sound experiences'[22]. Davies collected these readily available sound experiences just like he collected everyday objects to build his instruments. These works did not usually necessitate active playing, but active listening, seeking to integrate and emancipate aural experiences that before had been considered to be disturbances and background noise. The scores consisted of verbal directions to tune one's attention to the listening of unusual and unexpected sounds heard in different environments. Davies recorded them by recording these sounds on paper rather than on tape as he had done with the animal songs for the *Meldoci Gestures* compositions and the concrete sounds of *Natural Images*. He collected these writings under the banner of 'Sounds Heard'. Davies specified the date and location of each of the Sounds Heard, which pointed to the fundamental role that the environment played in the genesis of these pieces, and seemingly granting them the status of full compositions. Initially the Sounds Heard experiences were catalogued according to the time of the year and subsequently according to their energy source and environment. The four energy sources identified by Davies were human sounds, machine sounds, wind, and water sounds; the four environments were the city, the

countryside, the sea, and the mountains[23]. For instance, under the heading of human sounds, Davies listed those sounds produced on a pavement by a skateboarder, a suitcase, or a shopping basket. Also belonging to this category were machine sounds heard by placing the silver paper wrapping of a bar of chocolate in the teeth at the end of an escalator. In this latter instance the sound is classed as a 'machine' sound because a machine (i.e. the escalator) was the triggering agent, or the energy source by which the sound was activated, although the paper wrapping was the actual sound source. Wind sounds were heard listening to the different sounds that a rope or metal hawser on a flagpole produced. Examples of water sounds were heard by sleeping next to a stream, or allowing this sound to immerse the room[24]. Among the Sounds Heard grouped according to their environment, in city sounds Davies counted the syncopation of the clicks produced by pedestrian lights changing to red or green. Those in the countryside were heard as acorns fell around after a night of heavy rain. Sounds Heard by the seaside consisted in the bubbles escaping the air pockets in the dry sand near the estuary of a small river. Instances of Sounds Heard in the mountains were produced by an aircraft's sonic boom reverberating 'like thunder'[25]. Davies eventually also categorised the Sounds Heard depending on the kind of participation required by these experiences. In fact, the role of the performer determined the ontology of the work. If the performer had an active role in producing sound, then the piece would function as a found instrument. On the other hand if the performer was not active, the same piece was an environmental project. This proved further the fluidity and relationship between Davies's work in building instruments and his environmental works.

The Sounds Heard explicitly pointed to the elevation of environmental sound to the status of music as engendered by the dissolution of the concert hall walls that Cage had brought about with *4'33"*, which also marked the coincidence of art and life (nature). In

the Sounds Heard, the action of recording the sounds, developing a cognitive awareness of them, was a first step in establishing their musical potential, which was also a distinctive trait of the Schaefferian research into sound. For instance, in the text for the Sounds Heard in the city, Davies mentioned the syncopation of traffic lights, which clearly referred to the rhythmic characteristics of the sound. Davies thus was not simply interested in documenting a certain site's acoustic environment, but also in the conceptualisation of these sounds as musical material. In his piece *Three Reflections on Sound* (1977) Davies suggested imagining how those who are visually impaired depend and rely on hearing sounds to navigate an environment in the first reflection. In the second reflection he asked how hearing and sight compared in importance when crossing the road. In the third reflection he proposed to 'imagine drifting alone in a boat in the middle of the English Channel (or swimming across it) in thick fog, as the melancholy foghorns proclaim the passage of ships all around you, moving slowly in all directions as darkness falls'[26]. In this text Davies engaged the audience's imagination by evoking an experience of sound in the absence of the physical phenomenon, which is thus perceived on a conceptual level. This can be referred to the conceptualism of the Fluxus text-pieces. Bell, after Clüver, has described Davies's Sounds Heard as stimulating 'mental sonorisation'[27]. Davies's reflections attempted at suggesting a mood, a reaction to these sounds (the 'melancholy foghorns'), setting the scene in poetic terms ('in thick fog', 'ships…moving slowly', and 'as darkness falls'), rather than describing an everyday sound and scenario in a more neutral style. This piece thus points to the development of a musical aesthetic from environmental sources. Indeed as well as Sounds Heard, Davies also envisaged the Sounds Unheard, which described the experience of sounds that were 'unusually inaudible', such as Davies's encounter with a cat at an exhibition, which he had not heard coming[28]. In this piece Davies expressed an understanding of sound as a phenomenon that could be as conspicuous for its

absence as for its presence, and which interested as much our cognitive faculties than our sensual perception.

5.3.4. *Sounds Heard at La Sainte-Baume.*

The Sounds Heard featured listening as a crucial activity. However in his listening scores, which were types of Sounds Heard, Davies prescribed a number of more substantial interventions in the environment with the goal of achieving a better sound experience; *Sounds Heard at La Sainte-Baume* (1975) is an instance of this attitude. This piece had in fact marked the beginning of Davies's practice of annotating sound experiences, which he considered to be an equivalent of 'wish-you-were-here' postcards[29]. *Sounds Heard at La Sainte-Baume* was a location-specific score in which Davies selected sounds that were present in an environment and directed the audience to focus their attention towards them. Crucially Davies also instructed to interact with their source or means of propagation, at times actively engaging in sound production. The score read:

> '1) In a forest, listen for a woodpecker. Quietly approach the tree that is being pecked, and listen to the resonance produced inside it. You may find that these are most audible with "bone-contact" – place a finger in one ear and hold the knuckle against the tree.
>
> 2) On the top of a mountain, when there is a substantial breeze, stand so that the wind is blowing from one side (approximately 90-120 degrees: the exact position must be determined by trial and error). Open your mouth and let the wind produce quiet notes as it blows past your protruded lips, sounds that are varied by opening your mouth by different amounts and thus changing its resonant cavity, as in playing a Jew's harp.
>
> …
>
> 7) In a small secluded valley high up in the mountains, surrounded by rock on all sides: strike two stones together in regular rhythms at different speeds, sometimes with accelerando or ritardando, relating these in various ways to the echoes you hear. Face in different directions, to vary the direction and time-delay of the echoes. Invite other people to join in'[30].

In the first direction, the listener was advised to put a finger against the tree trunk, so that the sound of pecking of the bird could be more fully experienced. It is apparent, thus, that Davies was not solely interested in collecting sounds and documenting their experience. In fact, more than conducting a topographical study of sound, these sounds, like that of the woodpecker, were to be actively engaged with. The environment thus almost functioned like an installation, a type of 'found installation' that sometimes required interaction, thus also becoming an instrument. The bone contact suggested by Davies is in fact reminiscent of the principle of the Eargong, as it used the perceiver's body as a conductor. Davies's instructions also pointed to a decidedly musical approach in interacting with the environment, for instance by making direct reference to musical instruments (the Jew's harp) and musical language ('accelerando and ritardando'). This musical approach to sounding the environment was even more explicit in *Tuned Waterfall* (1973). In this piece Davies did give instructions to tune a small waterfall using large stones and small rocks, placing them in various arrangements at the lip of the waterfall for different acoustic results[31]. The idea of playing the environment like an instrument was further developed in instrument-pieces like The Mouth-in-the-Wind, the Nut Whistles (1976), and the Larchcone Clickers (1977). The Mouth-in-the-Wind was a simplified version of the second instruction of *Sounds Heard at La Sainte-Baume* (see also chapter 5). In this piece's score, Davies described how to interact with the wind, so that one's mouth could be made to sound. Davies had also 'exhibited' this instrument at the NRI, humorously defining it as a portable instrument[32]. With Mouth-in-the-Wind Davies blurred the boundaries of performer and instrument by making use of the wind as an activating force, in the same way as Bertoncini and Eastley had done with the Aeolian harp. Nonetheless, in Davies's work the 'instrument' that was activated by the wind coincided with the perceiver of the sound. The Nut Whistles consisted in a collection of nuts or acorns that were to be blown through the hole made in them by

squirrels, dormice, or insects that fed on them. The Larchcone Clickers were performed by running each of the thumbnails along the side of a larchcone. Davies instructed that these should be held in each hand, from bottom to top, and sound them in a small valley that produced echo reflections[33].

The Sounds Heard continued Davies's research in sound by integrating new sounds in his musical vocabulary. Like technology, the tradition of the *objet trouvé* had also opened up the door to nature. Indeed, by virtue of Dickie's Institutional Theory of Art, as discussed in chapter 5, intervention and consensus (the selection process and their agreed use) validated these objects – whether assemblages or natural products – as musical instruments. Nonetheless these found instruments stood in stark contrast to the urban environment that the Shozygs drew from. Even more surprising was the lack of electronic amplification. It could nevertheless be argued that Davies's approach was indeed influenced by electronic technology. For instance, recording technology seems to have been the conceptual framework that motivated in the first place the strategy of recording these sound experiences. In the same way that Schaeffer had recorded environmental sounds, such as that produced by a bell or a train, so had Davies recorded sounds like the clicking of traffic lights or the sound of a skateboard on a pavement. However Davies had done this using another type of recording technology: writing. What writing rather than recording the sound onto tape seemed to suggest was that these pieces advocated an immersion in nature, another way out of the confinement of the electronic music studio. Anybody could recreate these pieces. All that was needed was reaching those locations and listening out, or creating another version by executing the piece somewhere else. Thus Davies encouraged an active integration in the environment, while at the same time further continuing his pursuit of an immediate and immediately accessible form of music.

5.3.5. Larger scale projects.

Davies realised a series of larger scale works that specifically instructed to carry out actions that pertained to a specific environment in the manner of the Sounds Heard, such as *Music for Car Horns* (1967-69), *Singing Road* (1969, rev.1978), *Acoustic Park* (1975-1978), and *Unusual Sounds on the Campus* (1976-1977). These works pointed to the extension of the music making process to an audience that did not need to have a specific musical training, despite such compositions being underlined by a distinctly musical attitude. Indeed *Music for Car Horns* was written for fifteen cars and at least one performer for each car, and was to be performed in a car park, a quiet street, or a car showroom. In the score Davies instructed that the hooters be able to sustain a note and cover a range of two octaves. In the score seven different categories of relationships between the hooters were identified, depending on their tonal interval[34]. In *Singing Road* (1969, rev.1978), Davies envisaged using tyres, type of cars, and speed of the vehicles to optimise the 'singing' sounds produced by the friction between tyres and the road[35]. These could then be used to compose two-voice chords, two-part counterpoint or as much as six parts, when the piece was played on three lanes. *Music for Car Horns* and *Singing Road* could be considered to be naïve pieces in that, despite their environmental aspect, their realisation apparently disregarded ethical considerations about noise pollution and carbon emission. Nonetheless I argue that these texts can be read like conceptual pieces in the manner of his *Music for Strings* (see chapter 5) or some of the Sounds Heard scores. Indeed, these scores could simply be read to be experienced. Furthermore, although Davies made reference to pitch and counterpoint in *Music for Car Horns* this can be still reconciled with the experimentalist, modernist ethos because of the implied humour and iconoclasm in pursuing such a project. This would be an aspect that Davies pursued further in his music theatre pieces and some of his works for

traditional small ensembles discussed later in this chapter. A more ethically-sound project, which further evinced Davies's pursuit of a radical democratic music making process was the *Acoustic Park* (1975-1978), where no musicians, artists, sculptures, instruments, or other specifically-made props were to be included. Rather, this project was based on the work of a community and had the purpose of raising awareness of the surrounding acoustic environment. The performers of this piece were the people walking around the park along a path that was made of differently sounding materials (gravel, pebbles, stones, bricks, etc.) surrounded by walls that would have reflected the sound of footsteps, as well as walls with holes, which would have tuned the wind passing through them[36]. In this piece Davies further continued the discourse of environmental awareness through sound, which he had developed with the Sounds Heard. The collapse of art and life was also achieved by devising a work that was realised by everyday gestures (such as walking) and everyday sounds (the sound that footsteps produced over different surfaces). The consequence of an art that was made by everyday gestures and everyday sounds was that everyone could have produced it, and indeed *Acoustic Park* extended the participation in its realisation to a broader audience, thus collapsing the roles of performers and listeners. The *Environmental Recording Project* (1977, revised in 1980) sought to further involve participants by asking them to contribute their subjective experience of sound. The participants collected sounds according to subjective categories such as sustained sounds, interrupted sounds, beautiful sounds, ugly sounds, and sounds with a quality to be decided upon in advance collectively by the participants (e.g. loud, too loud, soft, too soft, disturbing, inappropriate, confused, isolated, etc.)[37]. These sounds would have then been subsequently discussed by the participants and played back simultaneously. Davies also engaged in environmental educational projects, which could be considered as an extension of his work in *Acoustic Park*, where the community was the beneficiary of the

work. For instance, *Unusual Sounds on the Campus* (1976-1977) was a project that Davies conducted at the University of Sussex. In this work he listed a series of spots in numerical order, also tracing their location on a map for the students to find[38]. This sound mapping was divided into categories: more or less permanent sounds, transient sounds – which were not guaranteed to be audible – and sounds caused by the strong wind that had been affecting the campus at the time. For the first category of sounds students were asked to find resonant spots, listen to a fountain, perform the coat hangers in the refectory, and listen to the sound of car engines. In the second category they were asked to stand at the bottom of a hill and listen to children come down its slopes with miniature lorries, listening to someone skateboarding on a pavement, or the amplified birdsong in a passageway. In the last category students were asked to listen to a tree with a split-trunk creaking, the wind 'playing buildings'[39] in a hallway with glass doors facing each other, and a spot where one could open one's mouth and let the wind play it. Other sound areas to explore were noises, hums, and buzzers made by fans, ventilators and other machinery, and studying the echo reflections off the campus buildings using speech, handclaps, footsteps, and stones struck together. Finally, the students were asked to make a sound collage of the selected sounds from around the campus exploring unusual juxtapositions. This project integrated Sounds Heard and found instruments, for example mentioning the human sound of a skateboard and pavement and the use of the Mouth-in-the-Wind instrument. Their inclusion in such a project highlights the underlining aesthetic of social integration that Davies was pursuing in his work. This kind of work would culminate in the large-scale site-specific installations that Davies realised in the early 2000s, such as *Tintinnabularia Coloniensis* (2002) and *Postojnski zvoncert* (Postojnian Bell-Concert) (2003). These were works that featured networks of bells that were activated by the visiting audience, who collectively participated in creating the piece. For instance in *Postojnski zvoncert*, visitors were invited

to walk around the installation at the Postojna Cave in Slovenia and perform the sounds, entirely based on bell sounds. A network of switches was installed at the exhibition, allowing visitors to trigger sounds. This installation included approximately eight bells or group of bells from China, Japan, India, Nepal, Thailand, and Africa. Some of them were animal bells (for camel, cows, goats, etc.), others did not have normal bell shapes (like orchestral tubular bells and bell-plates) or were not in fact bells but were objects shaped like bells and produce bell-like sounds. Such work seems to represent the fulfilment of the collective composition that Davies had pioneered with Gentle Fire.

5.4. Music theatre pieces and works for small traditional ensemble.

The trans-geographical juxtaposition of bells in the *Postojnski zvoncert* piece, the broad selection of sounds in the Sounds Heard, the salvaging of materials to build his invented instruments, and the transcription of animal song in the *Meldoci Gestures* compositions can be all considered as strategies to detach sounds or their sources from their everyday context. This inevitably affected their identity. That sounds could be easily lifted from their context points to a specific quality they possess. Casey O'Callaghan said that a sound does not belong to its source in the same way that a mosquito bite does not belong to the mosquito, but to the bitten[40]. Thus, although one may reclaim an object or select an environment within which a sound arises, it is not within this material framework that a sound can be assessed, since a sound is not a property of an object like colour or taste. Davies developed this awareness through his practice of salvaging found objects and sounds heard, perhaps conscious that music does not belong to its instruments but indeed to its listener. In fact in *Postojnski zvoncert* by grouping church, clock, animal bells and bell-sounding objects, what Schafer called 'sounds as

indicators'[41], Davies confounded the cultural and geographical references attached to these sounds. In a similar way in the *Meldoci Gestures* pieces by using song sources from various continents and transcribing them for a small ensemble pointed to a desire to go beyond a documentary approach. I claim that Davies was pursuing a distinctively musical project in all of these works, a project that became even more apparent in his music theatre pieces and small traditional ensemble works.

5.4.1. Music theatre pieces.

Since the beginning of the 1970s Davies started composing a series of music theatre pieces developing an approach to performance that he had already explored with *Commentary* (see chapter 4). Although this genre may not immediately appear consonant to Davies's aesthetics, his own understanding of music theatre as 'experimental opera'[42] explains such an interest. In these works Davies's approach was still mediated by his experience in inventing instruments and in producing live electronic music. In fact in *The Birth of Live Electronic Music* (1970) Davies intended to recreate the playback of old 78 rpm records through live performance. Written for phonofiddle (a type of violin in which the sounds were primarily heard through a horn), or Stroh violin, and acoustic sound system, the piece aimed at building an acoustic system made of an assembly of tubes joined by stopcocks that would funnel and 'mix' the sounds. The system had a number of inputs, which would lead to one output tube. The latter was a loudspeaker that consisted in the internal spiral folded horn of a deluxe electrical gramophone model made in Germany in 1927 (see figure 38). In this piece, fragments of old records dating from the same era were to be played, while the idiosyncrasies of the old playback system, such as the groove loops caused by scratching on the disc and the downward pitch slide caused by the slowing down and speeding up occurring when rewinding the

motor, had to be reproduced by two voices. Vocal sounds were also to imitate the sound of clicks, scratches, and the rhythm of the lead out groove at the end. *The Birth of Live Electronic Music* brought attention to the opacity of electronic technology and the impact it had on the resulting sound. In this work Davies continued 'quarrying the sources of mechanical and electrical sound production and from this an as yet un-heard reservoir created the basis for compositions and improvisations'[43]; in the *mise en scène* Davies used the unintentional sounds embedded in the early electronic reproduction of music as a material for performance. *The Birth of Live Electronic Music* could be interpreted as a further attempt made by Davies at integrating various 'extra-musical' sources such as the unwanted sounds that often accompanied the playing of recordings, in the musical domain. Davies 'transcribed' these sounds and scored them for voice, in the same manner he had done with animal song in the *Meldoci Gestures* pieces.

Technology was thus not only a means for Davies, but also an inspiration. This did not necessarily have to be electronic technology, but could have been mechanical, as demonstrated in his HD Breadbins, where the piano keys mechanism was simulated using plastic forks, spoons, and cups. In *The Birth of Live Electronic Music* Davies identified the origin of this genre of music in recording technology. The materiality that recordings conferred to sound could be said to be at the beginning of an experimental electronic music aesthetic, beginning with the work of Schaeffer in manipulating sound recorded on discs. The use of a phonofiddle suggests the 'primitive' nature of early electronic instruments that were yet to achieve the sophistication of their orchestral counterparts, as Davies had argued was in the case with his inventions (see chapter 5).

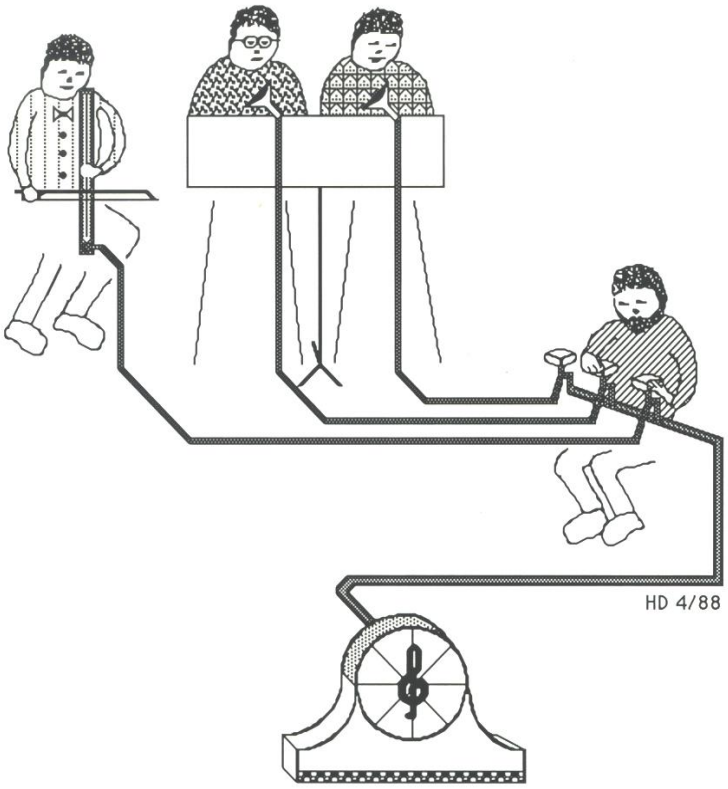


Figure 38. Image from the score of *The Birth of Live Electronic Music*, HDA.

Davies composed another music theatre piece titled *The Search for the Music of the Spheres* (1978). This was scored as a live performance version of an imaginary silent film. The plot consisted in a mad scientist who built a receiver to listen to the music of the spheres. All the sounds were to be produced by props and the objects attached to the performers' costumes, in a similar manner as in the concept for the Telephone-Bell-Tree-Jacket (see chapter 5). From time to time the performers were asked to stand still as the lights went down and a caption was projected onto a screen[44]. This piece clarified Davies's understanding of music theatre as 'experimental opera' as it allowed for a greater performative element, even a thematic staging that obviated to the lack of dramatic gestures to accompany the performance of his amplified instruments, while at the same time allowing for their inclusion through fictional strategies. In both *The Birth of Live Electronic Music* and *In Search for the Music of the Spheres* Davies referenced the beginnings of early recording technology, of music, and film. This points to a growing awareness of a tradition in the use of such means, which engendered a greater historical insight in their development, as well as a reflection on their influence and importance. Davies had also pursued the development of a historical perspective on recording technology in his essay 'A History of Sampling'.

5.4.2. Works for small traditional ensemble.

As a composer Davies had primarily specialised in music for instruments, which he invented and constructed. Over the years, however, he also composed a small body of works for traditional instruments, approaching them from the standpoint of an instrument inventor. These were either the results of ideas he developed in his invented instruments, or also in direct response to requests or commissions for works. In some of these works, Davies also continued to explore further the theatrical dimension of a

musical performance. *Kangaroo* (1968) for organ solo, had to be played on an organ with at least three manuals - indicated in the score by a Roman numeral: I (Great/Hauptwerk), II (Choir/Positiv), III (Swell/Brustwerk), and a 2-octave pedalboard[45]. The original registration was based on a three-manual church organ with 10-12 stops per manual. Registration details were enclosed in thick rectangular boxes, which were given only as a guide; the performer was left to select suitable stops on the organ used. The requirements excluded many of the more common organ stops such as Diapason and Principal.

Among Davies's vocal pieces there were *Vom Ertrunkenen Mädchen* (1964) for soprano, flute, clarinet, piano and *Haiku* (1974) for soprano and piano. *Vom Ertrunkenen Mädchen* (1964) was based on a text by Brecht that read:

'She was drowned and was floating downstream/ From the little brooks to the bigger rivers/ The sky shone with a beautiful opaline light/ As though to watch tenderly over the corpse/ Seaweed and algae clung to her/ So that slowly she grew heavier/ Cool swam the fishes around her legs/ Plants and animals impeding her last journey/ And the evening sky was dark like smoke/ And at night the starlight was kept in balance/ But the morning sky was bright so that/ For her there would be still morning and evening/ When her pale body decayed in the water/ It happened (very slowly) that God forgot her –/ First her face – then her hands – and at the very last her hair –/Then in the river she was carrion with carrion'[46].

The text for *Haiku* was composed by Davies and read:

'Raindrops muted by dead leaves outside my window/ The early sun, caping from a cloud, paints the boughs silver'[47].

The use of text in these pieces is very different from that which Davies used in *Gentle Springs* (see chapter 4), although the suggestion of tempo in the text for *Vom Ertrunkenen Mädchen* ('So that slowly she grew heavier') and of rhythm and timbre in the text for *Haiku* ('Raindrops muted by dead leaves') were developed in the music. In *Haiku* three rubber window wedges were to be inserted between the piano keys, holding them in a depressed position. Davies had used this method the year before in *Raisonnements* (1973) for piano, which was dedicated to Lise-Martine Jeanneret[48], who had commissioned it.

Raisonnements was written in homage to Charles Ives, whose centenary year began on the day that Davies completed the piece and whose spirit the work was said to evoke[49]. In this piece six window wedges were inserted between pairs of adjacent notes on the keyboard making it possible to hold down from two to twelve notes at once. Lifting the dampers produced sympathetic resonances when silently depressing the keys. Indeed, the French title was intended as a pun, since when spoken aloud '*raisonnements*' sounded like 'resonances', as well as meaning 'reasoning'. These resonances seemed to be informed by the concept of 'artificial reverberation' that Davies had developed when building the Springboards (see chapter 5). The wedges served the purpose of transforming the soundworld of the piano, by increasing its ability for sustaining sounds and thus expanding its sonority to make it sound as a slightly different instrument with richer possibilities. In certain sections these complex resonances were treated as being of equal importance with the notes that were actually played. The score was more prescriptive than descriptive of the sounds produced, since the fingering was too complex to be usefully notated. Thus, it was only in its performance – rather than during the reading of the score – that the piece could be effectively experienced.

The preparation of the piano had obvious origin in the work of Cage, but also in the *objet trouvé* tradition. Davies interpreted the concept of the *objet trouvé* in more explicitly musical terms in *The Pianoforte* (1974), a piece for pianist and speaker, with optional slide projector. This piece featured a part from a piano composition Davies wrote when eighteen years old and was one of seven sections that made up *The Musical Educator*, a music theatre composition based on a set of five volumes of that name written by William Townsend[50] published around 1900. The complete work involved two dancers, two musicians, speaker and two slide projectors. *The Pianoforte* included music theatre elements, in fact the harmonisation of the musical quote was to be dramatised by the

performer, who had to act as if spontaneously seeking (and struggling) to achieve it. In the score comic strip balloons appeared commenting on the music scored. These could be exclamations such as 'I'm getting pretty overworked with all these huge chords!', 'I've had enough of these huge sections!', 'let's see what's on the next page', and 'see how much more appropriate major sevenths and minor ninths are than octaves in this sort of music!' etc.[51] The pianist was to make small facial or physical gestures that corresponded to such thoughts. Davies wrote:

> 'These passages are mainly concerned with the pianist...trying out different treatments of the objet trouvé...to find which is the most effective, and these are "inserted" into the composition. At one point (p. 6) the pianist gets "fed up" with what the composer has written, plays some clusters (incl. using elbows!), turns the page over rather aggressively, and tries out an "up-to-date" harmonisation in major 7ths and minor 9ths (octaves are shown to be more effective on p.11); this goes wrong very soon, as the results of being developed logically, and for the remainder of the section the composer leaves the pianist in the lurch, unsuccessfully searching for some interesting material'[52].

Despite scripting some of the player's extra-musical actions, Davies did not wish this 'sub-plot' to distract from the music; hence it was not to be forced[53]. Nonetheless, the scripted action certainly framed the music and its appraisal. The narrative of the piece constituted an attack on the relationship between composer and performer as a site for repressive power structures. In the piece a speaker also read out passages from *The Musical Educator* book, which consisted in a series of technical recommendations to improve piano playing, such as for example on how to play the best staccato. In this instance the performer was to play the staccato so sharply that the hand 'slips off the keys and hangs down loosely'[54]. In the performance instructions Davies also advised to gradually slow down the playing as the verbal instructions from the speaker continued, until reaching a very slow tempo mark at bar 86. This was an attempt at expressing the stifling and ultimate paralysing effect that the demands of virtuosic playing had on the performer.

In *Rapport* (1981), it was the relationship between the musicians that was to be dramatised. Here the dynamics of a trio were made visible in the performance of the piece, for instance enacting the competition that existed in the ensemble. Thus, although Davies returned to a more conventional instrumentation and music writing in *Raisonnements*, *The Musical Educator*, and *Rapport*, he did so with a degree of detachment and irony. Indeed in these works he maintained the antagonistic stance towards tradition that had characterised his work in building new instrument. Seeking to overcome the aural limitations of conventional instrumentation and criticising the social dynamics of traditional music and especially focussing on the relationship between composer and the performer pointed to a shared attitude between these pieces and Davies's invented musical instruments. This type of music theatre could thus be considered experimental also because it turned a self-critical eye towards the very mechanism of music making and performance. Nonetheless, the choice of instrumentation and of tonal material, the recuperation of the past, and the use of irony, pointed to a postmodern sensibility. This is even more evident in *Brass Septet* (1963-64/1971-75), which consisted of four short pieces composed in 1963 and 1964: *Contact*, *Moonlight*, *Death Cell*, and *Vom Ertrunkenen Mädchen*. These pieces were rescored (mostly transposed downwards in pitch), with different sections and versions of each piece juxtaposed. For instance the first section of *Contact* appeared from bar 5 until bar 40, the second from bar 61 to 70, and the third from bar 92 to 129; while the first version of *Moonlight was* scored in bar 41, the second in bar 60, and the third in bar 71. The recuperation of the past was also carried out in the instrumental choice for the piece *Elegy* (1979 rev. 1990) for three serpents (or other bass instruments), dedicated to the memory of Nellie and Louise Kerling (Davies's landladies in Belsize Park from 1967 to 1985) and composed for the London Serpent Trio. The serpent was an instrument invented in France in 1590 as an accompaniment to monastic plainsong, and fallen into

disuse because it was difficult to play in tune and finally replaced by the tuba. The instrument was about six feet long and sinuously curved, thus inspiring its name. Davies had toured with the London Serpent Trio as part of a musical instrument makers project organised by the Crafts Advisory Committee. He subsequently further expanded the piece in occasion of the 400th anniversary celebrations of the serpent, organised by the London Serpent Trio. In that occasion Christopher Monk (1921-1991), a member of the Serpent Trio, was commissioned to build some new instruments. For instance, Monk realised the anaconda, which was a double-sized contra-bass serpent.

Employing unusual instrumentation had been a strategy that Davies had employed since the late 1960s, but the emphasis then had been on unorthodox instruments, rather than disused or obsolete instrumentation. Nonetheless, the appearance and the sound of the serpent could be interpreted as bringing to the fore the historical process behind what had come to be considered a 'natural' instrumentation as established in the symphony orchestra. The serpent in fact revealed the long process of selection and development that preceded the achievement of the Western art orchestra instrumentarium, it highlighted the process of trial and error and the selection process that had led to certain instruments being used and others to be discarded. The serpent also functioned as a discovered instrument in the same manner that an Eargong had, and further confirmed Davies's intentions of challenging the traditional musical norms, by undermining their importance and seeking an alternative to the standard instrumentation.

Conclusions.

Twentieth century music borrowed the epithet 'experimental' from the sciences, which had a long tradition in using the term to indicate a fundamental epistemological process. The reason for such an adoption in music is to be found in the aesthetic philosophy of modernism. Modern music, like the sciences, aimed at abolishing outmoded traditional practices. It is clear that the idea of experimentalism in music would not have arisen had not a notion of tradition been firmly established. Only the formation of a common 'classical' repertoire could have given an identity, albeit fragile and changing, to new and experimental music.

The heated debate that emerged between avant-garde music, connected to a Euro-centric tradition, and experimental music, associated with American practices, represented a further attempt to achieve a distinct identity by both factions in the fragmented and often competing cultural landscape of the twentieth century. The geo-political distinction between avant-garde and experimental music is however deemed too simplistic in its configuration, since it repressed the fundamental principle that underlined both projects, which was expressed in the antagonism towards tradition. Nonetheless a complete rejection of the past could have hardly been possible. In fact the radicalisation of music making pursued in experimental music was only achieved by holding the very musical tradition it sought to end in the utmost importance. Thus the significance of a piece like *4'33"* by John Cage was engendered by the familiar setting of the concert hall and the use of orchestral instruments as a reference. Furthermore, in experimental music the notion of music as a social practice and as an aesthetic experience was never rejected.

Cage has been considered the main spokesperson of an experimental music aesthetic; his description of experimentalism as an action whose outcome cannot be foreseen is frequently held as the definition of the genre. However, such an interpretation cannot be considered exhaustive in accounting for the heterogeneous practice that distinguished the experimental attitude. Thus, Schaeffer's definition of experimental music as 'research into music', seems more apt at indicating the exploratory and often idiosyncratic responses that characterised this kind of music.

Experimental music was the first musical genre to fully embrace electronic technology. The impact of the advances in electronics was noticeable in the many new musical instruments that employed this technology in the twentieth century such as the Theremin, and the Moog synthesizer. For many composers active at the time new music required new instruments. This was the case in Britain with Hugh Davies and Daphne Oram. Shozyg I and the Oramics both sought to seize the opportunities that the new technology had opened up in music. However the two instruments demonstrated a different perception in the role that electronic technology could play in music. Oram saw the Oramics as a Promethean enterprise able to conquer the universe of sound. The Oramics, in her view, represented the possibility to extend human capabilities and possibilities beyond the restrictions and limitations of the past, giving the user (the composer) total control of the material. However the complexity of the technological process that was embedded in the Oramics to achieve such aims far outweighed the extent to which the system could be used to produce music. Davies's Shozyg I, on the other hand, favoured immediacy in performance with the use of rudimental electronics. This instrument not only represented an attempt at expanding the musical soundworld, but it also articulated an indictment of the mass-produced and standardised synthesizers that

were becoming popular at the time. Davies disapproved of such standardisation, as it effectively restricted the possibilities that had been opened up by the new technology. For Davies new music required new instruments, but at the same time new instruments required new music; in his view the role of electronic technology was fulfilled in discovering new sounds.

Davies's research in sound led him to amplify everyday objects, obtaining results similar to those produced in the electronic music studio only after long hours of work. Davies called Shozyg I a '*musique concrète* synthesizer', as it allowed him to escape the confinement of the electronic music studio and bring electronic music in the live concert hall dimension. Shozyg I was compact and portable, ideal for transportation and immediate use. Because of Shozyg I Davies can be considered the first British live electronic music composer.

At the beginning of Davies's career live electronic music was his main interest. Davies believed that it was only because of the capturing of the magnetic tape in Germany by the Allied forces after the Second World War that tape music had become predominant, and he sought to readdress this imbalance with his work. This may explain why, although being the director of the electronic music studio at Goldsmiths college since 1967 for almost twenty years, Davies hardly produced any major electro-acoustic tape work until the late 1970s when he composed *Natural Images*. Even in that case the piece had been originally conceived as a live performance for dance, and later recorded to accompany a tour. Davies clearly possessed the knowledge necessary to pursue studio-based work, for instance he had compiled RIME, which was the most comprehensive resource on the world electronic music studios and practices at the time. Nevertheless Davies sought a more spontaneous engagement with electronic music than was possible with tape

and within the isolation of the electronic music studio, which he called an 'ivory tower'. Amplification offered a means to achieve such aims.

It is evident that Davies's experience working with Karlheinz Stockhausen was crucial in leading him to employ amplification. In the mid-1960s, when Davies worked as his assistant, Stockhausen was looking at ways to integrate real-time electronic processing of sound with live orchestral instruments, effectively bringing in the concert hall realm techniques that up until then had been relegated to the electronic music studio. *Mikrophonie I* was one such attempt and the use that the German composer made of amplification and everyday objects in the piece had no doubt a profound effect on Davies, who participated in the first performances of the work.

The use of amplification in live electronic music had also strong political overtones and can be said to mediate the social integration that was the theme of the 1960s civil rights movement. At the time women were claiming a greater egalitarian condition in the work place and the legalisation of abortion, ethnic minorities sought to end the institutionalised discrimination to which they were subjected, and the Stonewall riot offset the development of a movement for the recognition of gay and lesbian rights. Amplification gave voice to small everyday objects on a concert platform in the same way that these movements gave a voice to oppressed social groups on the international political stage.

Amplification was also the means that led Davies to share similar discourses with the Fine Arts. Indeed the inclusion of found objects in his amplified instruments marked a practice between sculpture and lutherie. Davies's feelings of greater affinity with visual artists rather than musicians can be attributed to the readiness and unorthodoxy with which visual artists like Max Eastley embraced sound as an

aspect of their work. The work produced by the interdisciplinary practice of music and visual art (sonic art or sound art) also welcomed new modes of musical engagement, as the audience could interact with the work and trigger sounds, or human agency could be restricted to listening while natural elements, like the wind, activated the work.

The extension of music making to the audience was implicit in Davies's instruments as they required no particular skills, thus anyone could have performed on them. Such inclusiveness can be considered an extension of the collective forms of composition that Davies developed while a member of the new music ensemble Gentle Fire. Gentle Fire had among its members composers and performers. The emergence of such groups in the post-war years was greatly facilitated by the kind of music composed at the time. For instance, in the performance of both the indeterminate scores of Christian Wolff and the intuitive music of Stockhausen, interpreters were often left with a number of significant choices to make, such as what instrumentation to use, whilst no requirement on their accomplishment at their instrument was made.

Virtuosity was one of the issues that Cornelius Cardew took to task by establishing the Scratch Orchestra, which featured musicians of various abilities. Like Davies, Cardew felt virtuosity was an obstacle to empowering people to participate in the musical process. To Cardew, virtuosity was a sign of the elitism that was inherent in the musical establishment, and which, motivated by his political beliefs, he worked to abolish. Cardew also perceived an oppressive social dynamics enshrined in music making. The graphic score of *Treatise* was one of his attempts at reformulating the traditional composer-performer relationship, a relationship that Davies was also critical of in his music theatre piece *The Musical Educator*. In this work the techniques

demanded in playing the piano and the authoritativeness of the composer's score are portrayed as stifling.

Cardew, Davies, and Oram, paid great attention to the social aspect of music making, and to the potential repercussions that music could have in society at large. For instance, Oram viewed the composer as invested with the responsibility of trying out possible forms of organisation in the music, which could then be applied to society[1]. In this respect improvisation, one of the most frequently used techniques in performance by Davies, enacted a radical form of democracy, granting an egalitarian position to all its participants, a musical utopia that mediated some of the political ideas widespread in Western political discourses at the time.

Improvisation also acquired a broader resonance in Davies's work, where its scope was extended to environmental concerns. Already in the words of Cardew improvisation incorporated elements which were particular to the location in which the performance took place. In Davies this understanding took a more explicit form with the integration of environmental ethics and epistemologies in his work. The Sounds Heard were in fact recordings of sound experiences that took place in various locations and advocated an immersion in the soundscape, encouraging the development of an awareness of one's surroundings through sound. They were the extreme logical consequence of the philosophy of silence professed by Cage, bringing about the dissolution of the boundaries of the concert hall perimeter and establishing a musical experience in the realm of the everyday. Davies's interest in nature and the environment took many different forms. For instance he recycled items to use in his instruments and realised site-specific installations. He composed listening scores and transcribed and arranged wildlife songs for orchestral ensembles. Environmental ethics characterised Davies's work in the same way that

technological progress and political ideology had guided the work of Oram and Cardew respectively. It could thus be argued that all these strategies were a result of the disengagement of music from traditional transcendental beliefs and from ideas of eternal beauty and absolute morals.

The concern with the environmental dimension of music in Davies was consonant with the wish to overcome the limits of the electronic music studio first, and of the concert hall afterwards. Such a development also fulfilled the collapse of art and life advocated by the Fluxus movement, which greatly influenced Davies. His *Music for Strings*, for instance, was an event-based piece in the tradition of Fluxus text scores. Furthermore, the humour present in many of his works was also a characteristic element of the aesthetics of Fluxus. Ben Vautier stated:

'As far as I am concerned, I think that/Fluxus is not a production of objects, of handicraft articles to be used as a decoration in the waiting rooms of dentists and professionals[2],/Fluxus is not professionalism/Fluxus is not the production of works of art,/Fluxus is not naked women,/Fluxus is not pop art,/Fluxus is not an intellectual avant-garde or light entertainment theatre,/Fluxus is not German expressionism,/Fluxus is not visual poetry for secretaries who are getting bored./NO/Fluxus is the "event" according to George Brecht: putting the flower vase on the piano./Fluxus is the action of life-music: sending for a tango expert in order to be able to dance on stage./Fluxus is the creation of a relationship between life and art,/Fluxus is gag, pleasure and shock,/Fluxus is an attitude towards art, towards the non-art of anti-art, towards the negation of one's ego,/Fluxus is the major part of the education as to John Cage, Dadaism and Zen,/Fluxus is light and has a sense of humor'.[3]

The Fluxus movement owned its development to Cage *in primis*, but also to the Duchampian critique of the art establishment.

Marcel Duchamp had begun realising his readymades at the beginning of the twentieth century. In the readymades selecting, choosing, and salvaging were actions invested with the same value that had traditionally been reserved to the craft of art. To Davies the selection of objects to feature in his instruments was already an act of

musical composition, as the acoustic limitations of the material shaped the soundworld of a piece.

At the same time assembling discarded and found objects in Davies's work was also a criticism of the consumerism that characterised society. Davies sought to demonstrate that items that society no longer considered useful could be employed to create something as valuable as music. He claimed:

'The more I use the objects, the more quickly I can get an idea whether something will interest me. I bought a lot of eggslicers before I got the right one; some were better than others…it's quite nice at the same time to show that everyday objects have some other aspect, which is not usually thought about. Apart from anything else it shows the enormous amount of stuff that is wasted in our society'.[4]

Thus Davies's new musical instruments lend themselves to several readings, and in particular Shozyg I, which is deemed to be his most representative work. Shozyg I can be seen as the product of the experimental music credo of Cage and Schaeffer as well as a product of the imperatives of modernism. It pointed to the century's technological advances but also to an archaic, primitive form of music making. It represented an example of early live electronic music as well as a critique of capitalist technology. It bridged fine art and musical discourses while engendering a collapse between art and life. It acted as an instrument for greater social inclusion as well as a rehearsal of ethical and environmental concerns in music. Finally the fact that this instrument was built in 1968, a year characterised by student protests, peace marches, and the advancement of the civil rights movement seems fitting when interpreting this musical invention, as well as the many others by Davies, as a powerful mediation of the cultural and socio-historical events that characterised the time and of the radical intents which motivated them.

Notes for the introduction.

[1] Davies, Pam private communication, (July 2011).
[2] Potter, Keith. Private communication, (May 2009).
[3] Davies, Hugh. Uncatalogued papers, HDA.
[4] Davies, Hugh. *Sounds Heard*, (Chelmsford, Soundworld, 2002), p.107.
[5] Davies, Hugh. Uncatalogued papers, HDA.
[6] 'The liberation of sound', *Contemporary Composers on Contemporary Music* (1998) Ed. E. Schwartz, (New York, Da Capo Press, 1998), pp. 197.
[7] Oram, Daphne. 'The composer', *Journal of the Composers' Guild of Great Britain*, 9, (1962), p. 5.
[8] Dates not known.
[9] Davies, Hugh. Uncatalogued papers, HDA.
[10] Searle also composed electronic music passages realised in his own private studio for his opera *Diary of a Madman* (1958) a setting of the homonymous short story by Nikolai Gogol (1809-1852).
[11] Ibid.
[12] This piece was later performed on its own at ONCE Festival in 1962.
[13] Gerhard, Roberto. Correspondence, HDA.
[14] The feature also won the British Academy of Film and Television Arts (BAFTA) award for animated film in 1958.
[15] Cary quoted by Oram. Correspondence, HDA.
[16] Davies, Hugh. Uncatalogued papers, HDA.
[17] The programme included *Diversed Mind* by Ernest Berk; *A Study in Limited Resources for Stereo Tape* (1967), *Birth is Life is Power is Death is God is* (1967), and *Winter Song* (1967) by Tristram Cary; *December Quartet* and *Sanctus* by Peter Zinovieff (1933-), *March Probabilistic* by Zinovieff and Alan Sutcliffe, *Silent Spring* by George Newson (1932-), *Synthesis 9 and 12* by Jacob Meyerowitz (dates not known), *Potpourri* by Delia Derbyshire (1937-2001), *Contrasts Essconis* by Daphne Oram and Ivor Walsworth (1909-1978) . Derbyshire's was the only piece realised at the BBC Radiophonic Workshop, all the other works were composed in private studios.
[18] Davies, Hugh. Uncatalogued papers, HDA.
[19] There were some notable previous examples of performances alongside recorded sound, as for instance Schaeffer and Henry's *Orphée '53* (1953).
[20] Ibid.
[21] Davies 2002, op. cit., p. 26.
[22] Here Davies meant that the tam-tam was prepared to modify its sound. This piece will be further discussed in chapter 4.
[23] Stockhausen, Karlheinz. Maconie, Robin. *Stockhausen on Music*, (London and New York, Marion Boyars, 1991), p. 80.
[24] Ibid., p. 77.
[25] Ibid., p. 80.
[26] Ibid., p. 78.
[27] Keith Potter. Seminar intervention, Goldsmiths College, 22 November 2011. For a discussion of how building new musical instruments could be considered a form of composition, see chapter 4.
[28] Dr Nicola Candlish and Dr James Mooney have researched on Davies's work (see bibliography), but these studies are not specifically concerned with Davies's own creative work.
[29] See for instance Manoff, Marlene. 'Theories of the Archives from Across the Disciplines,' *Portal: Libraries and the Academy*, (Baltimore, Johns Hopkins University Press, 2004), p. 9; Featherstone, Mike. 'Archive,' *Theory Culture Society*, 23, (2006), p. 591.
[30] Foucault, Michel. *The Archaeology of Knowledge and the Discourse on Language*, (New York, Pantheon Books, (1972), p. 128.
[31] Indeed Derrida has claimed that 'repression is an archivisation' (Derrida, Jacques. *Archive Fever: A Freudian Impression*, [Chicago and London: The University of Chicago Press, 1996], p. 64)
[32] Derrida, 1996, op. cit., p. 12.
[33] Ibid. p. 94.
[34] Ibid., p. 11.
[35] Ibid., p. 16-17.
[36] Mooney, James (forthcoming) 'Hugh Davies's Electronic Music Documentation 1961–8,' *Organised Sound: An International Journal of Music and Technology*, 20, 2.
[37] Manoff, 2004, op. cit., p. 15.
[38] Derrida, 1996, op. cit., p. 5.
[39] White quoted in Manoff, 2004, op. cit., p. 17.

[40] Derrida, 1996, op. cit., p. 3.
[41] Ibid., p. 68.
[42] Ibid., p. 36.

Notes for chapter 1

[1] Alternatively, another strategy could be to expand the understanding of indeterminacy so as to include different kinds of work, including Davies's. This move would be supported by examples of Cage's work where unorthodox sounds sources could be interpreted as replacing an indeterminate score, such as in *Branches* (1976), discussed later in this chapter.
[2] *Five Faces of Modernity, Modernism, Avant-Garde, Decadence, Kitsch, Postmodernism*, 2nd edition, (Durham, North Carolina, Duke University Press, 1987), pp. 120-125.
[3] Ibid., p. 13.
[4] In modern French the term '*expérience*' means both 'experiment' and 'experience'; thus, the terms are conflated in the minds of French-speakers – a fact that will inform the discussion on Schaeffer's appropriation of the term.
[5] See Metzger, Heinz-Klaus. 'Abortive concepts in the theory and criticism of music', *Die Reihe*, 5, (1959), pp. 21–29; Mauceri, Frank X. 'From experimental music to musical experiment', *Perspectives of New Music*, 35, 1, (1997), pp. 187-204; Landy, Leigh. *What's the Matter with Today's Experimental Music? Organized Sound Too Rarely Heard*, (Reading, Hardwood Academic Publishers, 1991). The positions of these authors are also discussed later in the chapter.
[6] Herschel, John F. W. *A Preliminary Discourse on the Study of Natural Philosophy*, (Chicago, University of Chicago Press, 1987), p. 76.
[7] Collins and Pinch quoted in Gower, Barry. *Scientific Method. A Historical and Philosophical Introduction*, (London, Routledge, 1996), p. 239.
[8] Gower 1996, op. cit., p. 238.
[9] Ibid.
[10] Călinescu 1987, op. cit., p. 14.
[11] Ibid., p. 15.
[12] Ibid., p.14.
[13] Ibid., p. 27.
[14] Ibid., p.73.
[15] Loisy quoted in Călinescu, Matei 1987, op. cit., p. 79.
[16] Călinescu 1987, op. cit., p. 68.
[17] Schaeffer quoted in Palombini, Carlos. 'Pierre Schaeffer, 1953: Towards an experimental music', *Music & Letters*, 74, 4 (1993), p. 542.
[18] Călinescu 1987, op. cit., p. 75.
[19] Helmoltz, Hermann. 'On the Sensation of Tone' (New York, Dover Publications, 1954), p. 2
[20] *Aesthetic Theory*, (London and New York, Continuum, 2004), p. 65.
[21] Schoenberg, Arnold. 'Brahms the progressive', *Style and Idea. Selected Writings of Arnold Schoenberg*, Ed. L. Stein, London, Faber and Faber, 1975), pp. 398-441.
[22] Schoenberg quoted in Rufer, Josef. *The Works of Arnold Schoenberg: A Catalogue of His Compositions, Writings and Paintings*, (New York, Free Press of Glencoe, 1963), p.48.
[23]'Classical Music as Popular Music', *The Journal of Musicology*, 3, 1, (1984), p.8.
[24] Boulez, Pierre. *Stocktakings from an Apprenticeship*, Ed. P. Thévenin, (Oxford, Clarendon, 1991), p.275.
[25] Ibid., p.271.
[26] Ibid., p.272.
[27] Ibid., p.274.
[28] Ibid., p.113.
[29] Boulez quoted in Nattiez, Jean-Jacques et al. *The Boulez-Cage Correspondence*, (Cambridge, Cambridge University Press, 1995), p.199.
[30] Nono, Luigi. 'Lo sviluppo della tecnica seriale', *Scritti e colloqui*, Ed. A. I. De Benedectis, V. Rizzardi, Milano, Ricordi, 2001), p. 19.
[31] Ibid., p.21.
[32] 'Who cares if you listen?', *Contemporary Composers on Contemporary Music*, Ed. E. Schwarzt and B. Childs, (New York, Da Capo Press, 1998), p. 244.
[33]'Abortive concepts in the theory and criticism of music', *Die Reihe*, 5, (1959), p.22.
[34] 'The work of art in the age of mechanical reproduction', *Mass Communication and Society*, (London: Edward Arnold in association with the Open University, 1977), p.385.

[35] Ibid., p.387-388.
[36] Ibid., p.389.
[37] Guglielmi, Angelo. *Avanguardia e sperimentalismo*, (Milano, Feltrinelli, 1964), p.56.
[38] Ibid., p.58. My translation. In the original text Gulgielmi said 'la ricerca di un nuovo dosaggio degli elementi espressivi, alla scoperta di nuovi impasti stilistici, in cui rifluiscono i 'materiali' più imprevisti, e aperti alle contaminazioni lessicali più ardite'.
[39] Oram, Daphne. 'The composer', *Journal of the Composers' Guild of Great Britain*, 9, (1962), p.7.
[40] 'Towards neo primitivism', *Modern Music* 10, 3, (1993), p.151.
[41] Sonic objects could be defined as distinct acoustic entities.
[42] Schaeffer quoted in Palombini 1993, op. cit., p. 547.
[43] Ibid., p. 552.
[44] Ibid., p. 542.
[45] Ibid., p. 552.
[46] Ibid., pp. 555-556.
[47] Ibid., p. 547.
[48] Ibid., p. 550.
[49]*What's the Matter with Today's Experimental Music? Organized Sound Too Rarely Heard*, (Reading, Hardwood Academic Publishers, 1991), pp.16-17.
[50] *Silence: Lectures and Writings*, (New York, Marion Boyars, 2009), p.69.
[51] Ibid., p.68.
[52] Ibid., p.63.
[53] Ibid., p.30.
[54] Ballantine, Christopher. 'Towards an aesthetic of experimental music', *The Musical Quarterly,* 63, 2, (1977), p. 237.
[55] Mauceri, Frank X. 'From experimental music to musical experiment', *Perspectives of New Music,* 35, 1, (1997), p. 191.
[56] Cage 2009, op. cit., p. 75.
[57] Ibid., p.63.
[58] Ibid., p.80.
[59] Ibid.
[60] Ibid., pp.4-5.
[61] Ibid., p.13.
[62] Ibid., p.28.
[63] Ibid., p.14.
[64] Ibid., p.32.
[65] Ibid., p.8.
[66] Ibid., p.80.
[67] Satie quoted in Cage 2009, op. cit., p.80.
[68] Cage 2009, op. cit., p.81.
[69] Ibid., p.10.
[70] This was a term coined by the French poet Guillaume Apollinaire (1880-1918) in 1917 describing a quest for pure invention.
[71] Ibid., p.82.
[72] Ibid., p.7.
[73] Varése 1998, op. cit., p.207.
[74] Ibid.
[75] Cage 2009, op. cit., p.15.
[76] Ibid., p.17.
[77] Ibid., p.15.
[78] Brecht, Bertolt. *Brecht on Theatre: The Development of an Aesthetic*, Ed. J. Willett, (New York, Hill and Wang, 1994), p.35.
[79] Ibid., p.43.
[80] Ibid., p.35.
[81] Lautréamont quoted in Nadeau, Maurice. *The History of Surrealism*, (Harmondsworth: Penguin, 1974), p.52.
[82] Benjamin 1977, op. cit., p. 398.
[83] Brecht 1994, op. cit., pp. 22-23.
[84] Cage 2009, op. cit., p.17.
[85] Ibid., p.14.
[86] Ibid., p.5.

[87] Ibid., p.9.
[88] Ibid.
[89] Ibid., p.4.
[90] Ibid., p.65.
[91] Ibid., pp.67-68.
[92] Ibid., p.4.
[93] Ibid., p.16.
[94] Ibid., p.79.
[95] Boulez quoted in Nattiez 1995, op. cit., p. 107.
[96] Cage quoted in Nattiez 1995, op. cit., p.96.
[97] Schaeffer quoted in Palombini 1993, op. cit., p. 545.
[98] Cage 2009, op. cit., p.53.
[99] Ibid., p. 74-75.
[100] Boulez quoted in Nattiez 1995, op. cit., p. 115.
[101] Ibid., p. 89.
[102] Cage quoted in Nattiez 1995, op. cit., p.48.
[103] Boulez quoted in Nattiez 1995, op. cit., p.116.
[104] Boulez 1991, op. cit., p.133.
[105] Ibid., p.26.
[106] Boulez quoted in Nattiez 1995, op. cit., p.117.
[107] Boulez and Cage quoted in Nattiez 1995, op. cit., p.30.
[108] Boulez 1991, op. cit., p.281.
[109] Boulez quoted in Nattiez 1995, op. cit., p. 80.
[110] Cage 2009, op. cit., p.75.
[111] Ballantine 1977, op. cit., p.244.
[112] *The Return of the Real: the Avant-garde at the End of the Century*, (Cambridge, Massachusetts, MIT Press, 1996), p.17.
[113]*Theory of the Avant-Garde*, (Manchester: Manchester University Press, 1984), p.18.
[114] Mauceri 1997, op. cit., pp.188-9.
[115] Backus quoted in Grant, Morag J. *Serial Music, Serial Aesthetics. Compositional Theory in Post-War Europe*, (Cambridge, Cambridge University Press, 2001), p.2.
[116]Nicholls, David. *American Experimental Music, 1890-1940*, (Cambridge, Cambridge University Press, 1991), p.526.
[117] Ibid., p.518.
[118] Nyman, Michael. *Experimental Music: Cage and Beyond*, 2nd edition, (Cambridge and New York, Cambridge University Press, 1999), p.2.
[119] Ibid., pp.27-8.
[120] Ibid., p.27.
[121] Ibid., p.29.
[122]'Avant-Garde or experimental? Classifying contemporary music', *International Review of the Aesthetics and Sociology of Music*, 9, 1, (1978), p. 64.
[123] Ibid., p.62.
[124] Stockhausen quoted in Cott, Jonathan. *Stockhausen: Conversation with the Composer*, (London, Pan Books, 1973), p.44; also quoted in Nyman 1999, op. cit., p.29 and Benitez 1978, op. cit., p.67.
[125] Nyman 1999, op. cit., p.29.
[126] Benitez 1978, op. cit., p.67.
[127] Ibid., p.61.
[128] Ibid., p.68.
[129] Ibid., p.69.
[130] Cage 2009, op. cit., p.59.
[131]'Sounds Heard. The music of Hugh Davies', *Media and Intermedia –Essays in Honor of Claus Clüver*, Ed. S. A. Glaser, (Amsterdam, Rodopi, 2009), p. 233.
[132] Benitez 1978, op. cit., p.70.
[133] The score says 'random' in English but significantly 'without intention' in German.
[134] Ibid., p.74.
[135] Tudor quoted in Benitez 1978, op. cit., p.74.
[136] Benitez 1978, op. cit., p.70.
[137]*Modern Music and After*, (Oxford, Oxford University Press, 1995), p.32.
[138] Ibid., p.29.

[139] For instance, Schoenberg (in *Theory of Harmony*, Berkeley, University of California Press, 1978, p.432) stressed the tonal development implicit in atonality, preferring the tem 'pantonal' to 'atonal'. This was an attempt to stress the lineage with the musical past rather than a rupture or negation.
[140] Landy 1991, op. cit., p.11.
[141]For an account of the universe of parametrical subdivision of sound and its hierarchical configuration see Landy 1991, op. cit., p.13.
[142] 'Technology and metaphysics', *A Companion to the Philosophy of Technology*, Ed. J. K. Berg Olsen et al., (Malden, Massachusetts, Wiley-Blackwell, 2007), p.217.
[143] Mauceri 1997, op. cit., p.194 and Landy 1991, op. cit., pp. 6-7.
[144] Mauceri 1997, op. cit., p.195. It must be noted however that Mauceri separated the notions of 'experimental' and 'experiential', whose meanings are conflated in French, the language in which the term was first used.
[145]'Elektronische Musik', *Die Musik in Geschichte und Gegenwart*, 3, (Kassel, Bärenreiter, 1954), p.1263.
[146] Benjamin 1977, op. cit., p.404.
[147] Palombini 1993, op. cit., p.555.
[148] Schaeffer quoted in Palombini 1993, op. cit., p.546.
[149]*Philosophy of Technology: Practical, Historical, and Other Dimensions*, (Dordrecht, Kluwer Academic Publishers, 1989), p.xxiii.
[150] Landy 1991, op. cit., p.7.
[151] Metzger 1959, op. cit., p.21.
[152] Dates not known.
[153] Later Hiller collaborated with Cage on *HPSCHD* (1967/69).
[154] Mauceri 1997, op. cit., p.196.
[155] Metzger 1959, op. cit., p.27
[156] Landy 1991, op. cit., p.6.
[157] Mauceri 1997, op. cit., p.187.
[158] Eisler quoted in Ballantine 1977, op. cit., p.95.
[159] Benjamin 1977, op. cit., p.387.
[160] Ibid., p.241
[161] John Cage quoted in Kostelanetz, R. *Conversing with Cage*, (London, Routledge, 2003), p. 223
[162] Such fears might have been confirmed by Evan Parker, who claimed that when working with long forms one no longer improvised, but just remembered (Parker quoted in Toop, D. 'The Generation Game,' *Audio Culture*, 2013b), p. 244.
[163] Feisst, S. 'Cage and Improvisation,' *Musical Improvisation: Art, Education, and Society*, (Urbana, University of Illinois Press, 2009), p. 44.
[164] Cage, 2009, op. cit., p. 36.
[165] Cage quoted in Feisst, 2009, op. cit., p. 44.
[166] Wolff quoted in Hamilton, A. 'The Music of Chance,' ' *Undercurrents: The Hidden Wiring of Modern Music*, (London, Continuum, 2002), p. 215.
[167] Brown quoted in Bailey, D. *Improvisation*, (London, British Library National Sound Archive, 1992), p. 62.
[168] Pay quoted in Bailey, 1992, op. cit., p. 72.
[169] Davies quoted in Bailey, 1992, op. cit., p. 80.
[170] Eco, U. 'The Poetics of the Open Work' in *Audio Culture: Readings in Modern Music*, (New York and London, Bloomsbury, 2013), p. 167.
[171] Ibid. 173
[172] Brown quoted in Bailey, 1992, op. cit., p. 63.
[173] Eddie Prévost, private communication, (September 2014).
[174] Cage, 2009, op. cit., p. 36.
[175] Ibid.
[176] Ibid.
[177] Prévost, *No Sound is Innocent*, (Harlow, Copula, 1995), pp. 12-13.
[178] Ibid., p. 149
[179] Ibid., p. 59. On the other hand, according to Evangelisti, the score as a visual means made the difference between improvisation and aleatoric music (Evangelisti quoted in Caporaletti, V. *I processi improvvisativi della musica*, [Lucca, Libreria Musicale Italiana, 2005], p. 280).
[180] Ibid., p. 33.
[181] Ibid., p. 172.
[182] Ibid., pp. 122-123.

[183] Thomas, P. 'A Prescription for Action,' *The Ashgate Research Companion to Experimental Music*, (Aldershot, Ashgate, 2009), p. 81.
[184] Prévost, 2009, op. cit., p. 101.
[185] Ibid., p. 53.
[186] Ibid., p. 94.
[187] Ibid., p. 98.
[188] Ibid., p. 115.
[189] Cage, J. 'Introduction to Themes and Variations,' *Audio Culture: Readings in Modern Music*, (New York and London, Bloomsbury, 2013), p. 222.
[190] Rzewski, F. 'Little Bangs: A Nihilist Theory of improvisation,' *Audio Culture: Readings in Modern Music*, (New York and London, Bloomsbury, 2013), p. 271.
[191] Caporaletti, 2005, op. cit., p. 9.
[192] Ibid., 91.
[193] For Caporaletti the first attestation of the use of the term 'composition' is from Ornithoparchus's *Micrologus* of 1517.
[194] Ibid., 94-95.
[195] Ibid., 63.
[196] Ibid., 98.
[197] Prévost, Edwin. Private communication, (September 2014).
[198] Nettl, Bruno. 'Thoughts on Improvisation: A Comparative Approach,' *Musical Quarterly*, 60, 1, (1974), p. 2, note 6.
[199] Ibid., 6.
[200] Ibid., 3.
[201] Ibid., 11.
[202] Ibid.
[203] Ibid., 4
[204] Alperson explained improvisation as a 'composition of a musical work as it is being performed' (Alperson, P. 'On Musical Improvisation,' *Journal of Aesthetics and Art Criticism*, 43, 1, [1984], p. 20). Also Gould and Keaton concluded that, since improvisation is 'a relation between the score and the performance event,' then it is 'conceptually independent of spontaneity' (Gould, C. and Keaton, K. 'The Essential Role of Improvisation in Musical Performance,' *Journal of Aesthetics and Art Criticism*, 58, 2, [2000], p. 145). Both assessments of improvisation are based on an idea of a composed work, that is performed whether spontaneously (Alperson), or not (Gould and Keaton), thus effectively subsuming a concept of improvisation to that of a work-performance.
[205] Schoenberg, 1975, op. cit., p. 439.
[206] Rzewski, 2013, op. cit., p. 267.
[207] Ibid., 268
[208] Bailey, 1992, op. cit., p. 37.
[209] Jones, S. 'Making it Up As You Go Along,' *Leonardo Music Journal*, 11, 1, (2001), p. 61
[210] Prévost, E. "The Aesthetic Priority of Improvisation: A Lecture," *Contact*, 25, (1982), p. 32
[211] Ramshaw, S. 'Deconstructin(g) Jazz Improvisation: Derrida and the Law of the Singular Event,' *Critical Studies in Improvisation* 2, 1, (2006), p. 2.
[212] Ibid., 7-8. Caporaletti characterises improvisation-based musics as springing from what he calls the 'audiotactile principle' or PAT (Principio Audio Tattile), a medium which shapes the soundworld in its poietic and phenomenological materiality, but also in its symbolic and creative entity (Caporaletti, 2005, op. cit., p. 13). This is a principle that Caporaletti uses to characterise to greater and lesser degree African-American musics and the improvisatory musics of the modern Western tradition.
[213] Brown, L. 'Improvisation,' *The Routledge Companion of Music and Philosophy*, (London and New York, Routledge, 2011), p. 62.
[214] Coleman, O. 'Change of the Century,' *Audio Culture: Readings in Modern Music*, (New York, London, Bloomsbury, 2013), pp. 253-254.
[215] Ibid. p. 254.
[216] Prévost, 1995, op. cit. p.1. Nonetheless Prévost has also acknowledged the origin of free improvisation in jazz (Prévost, 1982, op. cit., p. 33).
[217] Lewis, George E. 'Improvised Music After 1950: Afrological and Eurological Perspectives,' *Audio Culture: Readings in Modern Music*, (New York, London: Bloomsbury, 2013), p. 280.
[218] Ibid. p. 274.
[219] Bailey claimed that Jospeh Holbrooke was interested both in Webern and Coltrane (Bailey, 1992, op. cit. p. 87); Bryars also claimed that the music of the group was based on jazz (Bryars quoted in

Bailey, 1992, op. cit., p. 91) Bailey's *Pieces for Guitar* were influenced, according to Bailey by Webern (Bailey quoted in Watson Ben. *Derek Bailey and the Story of Free Improvisation* [London, New York, Verso, 2004], p.123).

[220] Caporaletti, 2005, op. cit. pp. 280-81. According to Caporaletti, these African-American forms of improvisation were based on the formative phenomenology of what he defined as the audiotactile principle.

[221] Bailey, 1992, op. cit., pp. xi-xii

[222] Ibid., p. 83

[223] Costa on the other hand goes as far as saying that in free improvisation 'there is not a language or a previously established system in the context of which the musical practice will happen (Costa, R. 'Free Musical Improvisation and the Philosophy of Gilles Deleuze,' *Perspectives of New Music*, 49, 1/2, [2011], p. 139, note 1). He also speaks of a performance where 'there is not a specific territory [a Deleuzian term] (idiom) that unifies the performance, it is the sonic objects that give musical consistency to this practice' (Costa, 2011, op. cit., p. 128).

[224] Watson, 2004, op. cit., p. 251.

[225] Costa, 2011, op. cit., p. 137.

[226] Bailey, 1992, op. cit. p. 94. The use of electronics has also been identified by Prévost as one of the traits that distinguished non-jazz free improvisation as well as the inclusion of unconventional sound sources (Prévost, 1995, op. cit., p. 71).

[227] Davis was recruited in MIC as a live electronics player, taking over John Tilbury, who had replaced Gavin Bryars. According to Bailey Davies was chosen because Davies was not as opposed as his predecessors to the idea of improvisation. (Bailey quoted in Watson, 102-103). Davies also engineered a performance of Iskra 1903 (which comprised Bailey, Barry Guy and Paul Rutherford) live at the ICA in August 1970 and participated to Company Week 1983 (held at the ICA between 24 and 28 May) playing live electronics and Company Week 1990 playing a trio with Max Eastley and Alan Tomlinson. Stuart Jones of Gentle Fire took part in Company Week 1984.

[228] Ibid., p. 94.

[229] Ibid., p. 83.

[230] Prévost, 1995, p. 36.

[231] Ibid., p. 3.

[232] Ibid., p. 19.

[233] Ibid., p. 141, Prévost also claims that 'classicism deals only with the inert,' (Ibid., p. 49) and that 'Classicism must always be countered' (Ibid., p. 51).

[234] Ibid., p. 58.

[235] Ibid., p. 123.

[236] Ibid., p. 105

[237] Ibid., p. viii.

[238] Prévost, *AMM*: *The First Concert*, (Harlow, Copula, 2011), p.133.

[239] Stirner, M. *The Ego and Its Own*, Edited by David Leopold, (Cambridge, Cambridge University Press, 1995), p. 145.

[240] Oxley quoted in Watson, 2004, op. cit., p. 65.

[241] Prévost quoted in Watson, 2004, op. cit., p. 265.

[242] Dean, R. T. and Smith, H. *Improvisation, Hypermedia and the Arts since 1945*, (Amsterdam, Harwood Academic Publishers, 1997), p. 30.

[243] Lash, D. 'Derek Bailey's Practice/Practise,' *Perspectives of New Music*, 49, 1, (2011), p. 148.

[244] Bailey implied this when he declared that 'the instrument is not just a tool but an ally. It is not only a means to an end; it is a source of material, and technique for the improviser is often an exploitation of the natural resources of the instrument' (Bailey, 1992, op. cit., p.99)

[245] Prévost, 1995, op. cit., p. 72.

[246] Toop, D. 'Frames of Freedom Improvisation, Otherness and the Limits of Spontaneity,' *Undercurrents: The Hidden Wiring of Modern Music*, (London, Continuum, 2002), p. 234.

[247] Rzewski, 2013, op. cit., p. 269

[248] Ibid., p. 268.

[249] Watson, 2004, op. cit., p. 192.

[250] Ibid., 318

[251]Backstrom, Melvin James. 'The Field of Cultural Production and the Limits of Free Improvisation,' *Critical Studies in Improvisation*, (2013), 9, 1, p. 5. Furthermore for Backstrom free improvisation needs to frame its practice positively as 'freedom *to* perform any musical style or form imaginable rather than the negative freedom *from* traditional styles and forms.' However, such

framing would change this practice substantially as it would shift from a modernist to a post-modernist ethos.

[252] 'One of the generative themes of this meta-music is the relationship between musicians.' (Prévost, 1995, op. cit., p. 129). Also see Bailey 'some of the greatest opportunities provided by free improvisation are in the exploration of relationships between players' (Bailey, 1992, op. cit., p. 105); 'Ultimately the greatest rewards in free improvisation are to be gained in playing with other people' (Bailey, 1995, op. cit., p. 112).

[253] Prévost has nonetheless criticised the practice of constantly performing with new musicians, which he called a 'composition-like device' (Prévost, 1995, op. cit., p.125)

[254] Davies quoted in Bailey, 1992, p. 95.

[255] See for instance the discussion between Bryars and Bailey, with Bryars claiming to have rejected improvisation as a viable means because 'the person creating the music is identified with the music,' while Bailey retorted that in improvisation 'you are taken 'outside of yourself." (Bailey, 1995, p. 115). There is also tension in Prévost claims that free improvisation as 'a vehicle for self-expression', whilst also admitting that the resulting music transcends individual sensibilities (Prévost, 1995, op. cit., p. 71-72). Caporaletti, on the other hand, questioned the iteration that is present in the improvisations of Bailey, which he called 'introverted' and distinguishes them from the 'interplay' that is at the basis of African-American music (Caporaletti, 2005, op. cit., p. 57).

[256] Prévost, 1995, op. cit., p. 49

[257] Rzewski, 2013, p. 271.

[258] Bailey, 1992, op. cit., p. 20.

[259] Attali, J. *Noise: The Political Economy of Music.* (Minneapolis, Minnesota and London: University of Minnesota Press, 1985), pp. 65-67.

[260] Canetti quoted in Bailey, 1992, op. cit., p.20.

[261] Prévost, 1995, op. cit., p. 99.

[262] Ibid., p. 169.

[263] Ibid., p. 37.

[264] Ramshaw, 2006, op. cit., p. 3.

[265] Prévost, 1982, op. cit., p. 33.

[266] Attali, 1985, op. cit., p. 142.

[267] Gilbert, J. 'Becoming-Music: The Rhizomatic Moment of Improvisation,' *Deleuze and Music*, (Edinburgh, Edinburgh University Press, 2004), pp. 124-125. However Caporaletti has questioned the nature of collectivism advanced by free improvisation by analysing the writings of Evangelisti. For instance, in reading Evangelisti's statement that 'it is the first time in the history of Western music that […] several composers gather together playing various instruments, and the work that is produced is the result of a collectivity that depersonalises the idea of the work that is the product of a single author,' (Caporaletti, 2005, op. cit., pp. 277-278, my translation) Caporaletti notes that Evangelisti conceives collective improvisation as an aggregate of 'composers', each as an autonomous entity, who unite to find a group expression, thus still adhering to a Western mentality of individualism. However Evangelisti's interpretation of improvisation cannot be taken to be representative of the kind of practice developed by groups like AMM; in fact, Prévost has completely rejected the notion of composition and the authority of the composer on socio-economic grounds.

[268] Toop, 2002, op. cit., p. 238.

[269] Stevens quoted in Baileys, 1992, op. cit. p. 119.

[270] Asplund, R. 'Frederic Rzewski and Spontaneous Political Music,' *Perspectives in New Music* 33, 1/2, (1995), p. 430

[271] Samson, M. 'Imaging Music: Abstract Expressionism and Free Improvisation,' *Leonardo Music Journal* 11, 1, (2001), p. 33.

33. Stevens has suitably defined spontaneity as a 'moment by moment involvement.' (Stevens quoted in Bailey, 1992, op. cit., p. 120)

[272] Samson, 2001, op. cit., p. 32.

[273] Parker quoted in Bailey, 1992, op. cit., p. 94

[274] Prévost quoted in Atton, C. F. 'Improvised Music: Some Answers to Some Questions,' *Contact*, 33, (1988), p. 14.

[275] Lash, 2011, op. cit., p. 165.

[276] Parker quoted in Atton, 1988, op. cit., p. 14.

[277] Hallet quoted in Atton, 1988, op. cit., p. 14.

[278] Davies, Hugh. Uncatalogued papers, HDA.

[279] Behrman quoted in Cox, C. 'The Jerrybuilt Future: The Sonic Arts Union, ONCE Group, and MEV's Live Electronics' *Undercurrents: The Hidden Wiring of Modern Music*, (London, Continuum, 2002), p. 40.
[280] Bailey, 1992, op. cit., p. 35.
[281] Cardew, C. 'Towards an ethic of improvisation', *Cornelius Cardew: A Reader*, (Essex, Copula, 2006), pp. xx.
[282] Bailey, 1992, op. cit., p. 64.
[283] Ibid., p. 15.
[284] Ibid., 15. Prévost said that 'it might be that a 'composition' will be created as a result of an improvisation [i.e. a recording], but the act of improvisation displays none of the characteristics of premeditated formulation to which the term 'composing' habitually refers' (Prévost, 1995, p. 60).
[285] Gould, G. 'The Prospects of Recording,' *Audio Culture: Readings in Modern Music*, (New York, London: Bloomsbury, 2013), p. 115.
[286] Bailey, 1992, op. cit., p. 106. Davies also asserted in a private communication with me in 2004 that he believed the epithet 'live,' especially in electronic music, a much more appealing experience for an audience

Notes for chapter 2.

[1] Dates not known.
[2] Dates not known.
[3] The Artist Placement Group archive, Tate Archive, London. TGA 2004/2/3/1 CV.
[4] Dates not known.
[5] Walker, John A. 'APG: The Individual and the Organisation: A Decade of Conceptual Engineering,' *Studio International*, 980, 1976, pp. 162-3.
[6] Brisley, Stuart. 'No, it is not on,' *Studio International*, 942, (1972), p. 96.
[7] Walker, 1976, op. cit., p.164.
[8] The Artist Placement Group Archive, 'APG Statements,' TGA 2004/2/3/1.
[9] Bolt Rasmussen, Mikkel. 'The Politics of Interventionist Art: The Situationist International, Artist Placement Group, and Art Workers' Coalition,' *Rethinking Marxism: A Journal of Economics, Culture & Society*, 21, 1, (2009), p. 43.
[10] Walker, 1976, op. cit., p. 164.
[11] Davies, Hugh. 'Artist: Hugh Davies Placement: Department of Health (London),' *Studio International* 980, (1976), p. 169.
[12] Gellhorn, Martin. 'Re: Hugh Davies', email to me, lupin469@hotmail.com, (21 August 2013).
[13] Dates not known.
[14] Davies, Hugh. Uncatalogued papers, HDA.
[15] Dates not known.
[16] Dates not known.
[17] Several English translations of the original German title *Der gute Mensch von Sezuan* exist, such as *The Good Person of Szechwan* and *The Good Soul of Szechuan*.
[18] In 2003, 41 years after the music was first composed, Davies assisted in the preparation of a performance of this work at the Mountview Theatre School, London.
[19] Davies Hugh. 'Reflections of a composer', uncatalogued papers, HDA.
[20] Dates not known.
[21] The instrumentation for this piece is not known.
[22] Dates not known.
[23] Gellhorn has claimed sole authorship of this piece (Gellhorn, Martin. 'Re: Hugh Davies', email to me, lupin469@hotmail.com, [21 August 2013]).
[24] Davies, Hugh. Uncatalogued papers, HDA.
[25] Dates not known.
[26] Oram, Daphne. Correspondence, HDA.
[27] Dates not known.
[28] Oram, Daphne. *An Individual Note*, (London, Galliard, 1972), pp.14-15.
[29] Ibid., pp.12-13.
[30] Ibid., pp.112-113.
[31] Oram, Daphne. 'Looking back…to see ahead' *Computer Music Review*, 11, (1994), p.227
[32] Hutton, 2000, op. cit., p.17.
[33] Oram. Daphne. Correspondence, HDA.
[34] Ibid.

[35] Davies, Hugh. Uncatalogued papers, HDA.
[36] Dates not known.
[37] Oram, Daphne. Correspondence, HDA.
[38] Davies, Hugh. *Electronic Music*, BA dissertation, Oxford University, (1964), p. 11.
[39] Schaeffer, Pierre. *In Search of a Concrete Music*, Trans. J. Dack, C. North, (Berkeley, University of California Press), p.13.
[40]'What is electronic music?', *Die Reihe*, 1, (1958), p.1. It is however arguable whether Schaeffer and Eimert understood sound in the same manner.
[41] Davies 1964, op. cit., p.11.
[42] Ibid.
[43] Ibid.
[44] Oram, Daphne. Correspondence, HDA. Oram was not more specific about what sort of help Davies provided.
[45] Ibid.
[46] This is my own nomenclature, the studio did not have an official name as far as I am aware.
[47] Oram, Daphne. Correspondence, HDA.
[48] Ibid.
[49] Davies quoted in Hopkins Bill. 'Review', *Cherwell,* 16 February 1963.
[50] Dates not known.
[51] Dates not known.
[52] Dates not known.
[53] Dates not known.
[54] Dates not known.
[55]'An electronic music studio for the independent composer', *Journal of Audio Engineering Society*, 12, 3, (1964), p.240.
[56] Brochure by the University of Michigan, School of Music, in Ann Arbour, 15 January 1965, HDA.
[57] This succeeded the RTF in 1964.
[58] Dates not known.
[59] Dates not known.
[60] Dates not known.
[61] Dates not known.
[62] Davies, Hugh. *Répertoire international des musiques électroacoustiques/ International Electronic Music Catalog*, (New York, MIT Press and Paris, Groupe de recherches musicales de l'O.R.T.F, 1968a), p.16.
[63] Davies, Hugh. Uncatalogued papers, HDA.
[64] Davies 1968a, op. cit., p.V.
[65]'Letter'. *Notes*, 24, 3, (1968), p.485.
[66]'What is Electronic Music', *Musical Times*, 5, (1969), p.493.
[67] Berio quoted by Davies. Uncatalogued papers, HDA.
[68] Hiller quoted by Davies. Uncatalogued papers, HDA.
[69] Ligeti quoted by Davies. Uncatalogued papers, HDA.
[70] 'Letter'. *Music Journal*, 9, (1968), p. 93.
[71] Hansen quoted by Davies. Uncatalogued papers, HDA.
[72]*Electronic Music*, (Oxford, Phaidon, 1981), p.32.
[73] Matthews quoted in Davies, uncatalogued papers, HDA.
[74] Davies 1968a, op. cit., no page number.
[75]Davies, Hugh. Correspondence, HDA.
[76] Appleton 1968, op. cit., p.486.
[77] Oram, Daphne. Correspondence, HDA.
[78] Davies, Hugh. Uncatalogued papers, HDA.
[79] Appleton 1968, op. cit., p.486.
[80] Mumma 1964, op. cit., p.243.
[81] Davies, Hugh. Uncatalogued papers, HDA.
[82] Mumma 1964, op. cit., p.244.
[83] Davies, Hugh. Uncatalogued papers, HDA.
[84] Ibid.
[85] Davies, Hugh. 'Electronic music studios in Britain 4: Goldsmiths College, University of London' *Contact*, 15, (1976-77), p.37.
[86] Dates not known.

Notes to chapter 3.

[1] Davies, Hugh. Uncatalogued papers, HDA. It is not know where the lecture was held.
[2] Davies, Hugh. Uncatalogued papers, HDA.
[3] Davies, Hugh. *Karlheinz Stockhausen*, unpublished book, second draft, (c. 1966), HDA, manuscript with no page numbers.
[4] Ibid.
[5] Clarendon Press was the name used by books published by the Oxford University Press (OUP) based in Oxford, while the imprint 'Oxford University Press' was reserved to books published by their London office. After the London office closed in the 1970s, OUP retained the 'Clarendon Press' name to distinguish books of particular academic importance.
[6]Davies, Hugh. *The Music of Karlheinz Stockhausen*, unpublished book, first draft, (c.1965), HDA, manuscript with no page numbers.
[7]Davies, Hugh c.1966, op. cit.
[8] No documents relating to this book have yet been recovered.
[9] Davies, Hugh. Correspondence, HDA.
[10] Mason, Colin. Correspondence, HDA.
[11] Stockhausen, Karlheinz. Correspondence, HDA.
[12] Jayne Stephens is Suzanne Stephens's sister.
[13] Stephens, Suzanne. Correspondence, HDA.
[14] Ibid.
[15] Davies, Hugh. correspondence, HDA.
[16] Stockhausen, Karlheinz. Correspondence, HDA.
[17] Ibid.
[18] Davies, Hugh. Correspondence. HDA.
[19] Ibid. The relationship between Universal Edition and the Stockhausen-Verlag was to become rather tense: in a letter part of the Hugh Davies Archive dated May 1979, replying to a complaint made regarding the pricing structure of the Stockhausen catalogue, a representative of the publishing company sarcastically wrote: 'whilst we fully appreciate and respect the philanthropic philosophy that forms the basis of Stockhausen-Verlag, we regret that we cannot incorporate such noble principles into our company'.
[20] Stockhausen quoted in Maconie, Robin. *Other Planets: The Music of Karlheinz Stockhausen*, (Oxford: Scarecrow Press, 2005), p.255.
[21] Cardew, Cardew. 'Music in London', *The Musical Times*, 107, 1475, p.44.
[22] Ibid.
[23] Whittall, Arnold. 'Electroacoustic music', *Oxford Music Online*, http://www.oxfordmusiconline.com/subscriber/article/opr/t114/e2223, (accessed 6 February 2012).
[24] Stockhausen, Karlheinz. 'The composer on his work', *The Christian Science Monitor*, 22 July 1968.
[25] Ibid.
[26] Davies, Hugh. 'Working with Stockhausen', *The Composer*, 27, (1968b), p.10.
[27] Ibid.
[28] Davies, Hugh. Uncatalogued papers, HDA.
[29] *Stockhausen's Electronic Music*, manuscript, HDA.
[30] Stockhausen, Karlheinz. Kohl, Jerome. 'Electroacoustic performance practice', *Perspectives of New Music*, 34, 1 (1996), p.97.
[31] Cardew 1966, op. cit., p. 43.
[32] Thomas, Sarah. 'Stockhausen in London', *The Guardian*, 4 December 1965.
[33] Ibid.
[34] Dates not known.
[35] Heyworth, Peter. *The Observer*, 25 April 1971.
[36] *Irish Times*, 6 December 1965.
[37] *The Times*, 6 December 1965.
[38] Cole, Hugo. *The Guardian*, 6 December 1965.
[39] Ibid.
[40] Cooper, Martin. *The Daily Telegraph* 6 December 1965.
[41] Ibid.
[42] Davies, Hugh. *The Glasgow Herald*, HDA, (1968).
[43] Dates not known.
[44] Dates not known.
[45] Dates not known.

[46] Davies, Hugh. 'Gentle Fire: An early approach to live electronic music', *Leonardo Music Journal*, 11, (2001), p.57
[47] Ibid., p.57.
[48] Souster, Tim. 'First performances who's exhausted?', *Tempo*, 87, (1968-69), pp.25-26.
[49] Bergstrøm-Nielsen, Carl 'FIXING/CIRCUMSCRIBING/SUGGESTING/EVOKING. An analysis of Stockhausen's text pieces', (2006), http://www.stockhausensociety.org/intuitive-music.htm, (accessed 19 May 2012).
[50] Stockhausen, Karlheinz. *Aus den sieben Tagen (From the Seven Days)*, (Vienna, Universal Edition, 1970), p.6.
[51] Ibid., p.12.
[52] Stockhausen quoted by Davies. Transcript of recording, HDC, C1193/25 C4.
[53] Stockhausen 1970, op. cit., p.11.
[54] Davies, Hugh. Transcript of recording, C1193/25 C2, HDC.
[55] Davies, Hugh. 'Music in Our Time with Stephen Plaistow', HDC, C1193/35 C3, (1973).
[56] Robinson quoted in Davies 2001, op. cit., p.58.
[57] Robinson, Michael. Interview broadcast, HDC, C1193/35 C3, (1973).
[58] Emmerson, Simon. 'Live electronic music in Britain: Three case studies', *Contemporary Music Review*, 6, 1, (1991), p.185.
[59] Wolff, Christian. *Prose Collection*, http://www.frogpeak.org/unbound/wolff/wolff_prose_collection.pdf, (accessed 20 May 2012), p.6.
[60] Robinson, Michael. Interview broadcast, HDC, C1193/35 C3, (1972).
[61] Davies, Hugh. Interview broadcast, HDC, C1193/35 C3, (1972).
[62] Bernas, Richard. Interview broadcast, HDC, C1193/35 C3, (1972).
[63] Ibid.
[64] For the realisation of *Two-Guinea Ode* each of the five members of Gentle Fire chose one segment of the score and prepared a part independently from the others. The text consisted of a newspaper with misprints, which was to be sung. The piece was then recorded in connection with an exhibition of Furnival's work at the Verlaine art gallery in Newcastle from 12 November to 11 December 1971.
[65] Davies, Hugh. *Group Composition II*, scores, HDA.
[66] Robinson, Michael. Interview broadcast, HDC, C1193/35 C3, (1972).
[67] Ibid.
[68] Davies, Hugh. Interview broadcast, HDC, C1193/35 C3, (1972).
[69] Davies, Hugh. *Spring Song*, scores, HDC.
[70] Ibid.
[71] Ibid.
[72] Ibid.
[73] Ibid.
[74] Ibid.
[75] Davies, Hugh. *Commentary*, scores, HDA.
[76] According to recent research, the visual experience of performers' gestures significantly impacts the expressiveness audiences experience in the music. For an account of visual perception of performance gestures see the work of Jane W. Davidson. In particular Davidson, J.W. 'Visual perception of performance manner in the movements of solo musicians', *Psychology of Music*, 21, 1993, pp.103-113; Davidson, J.W. 'What type of information is conveyed in the body movements of solo musician performers', *Journal of Human Movement Studies*, 6, 1994, pp. 279-301; Davidson, J.W. 'The role of the body in the production and perception of solo vocal performance: A case study of Annie Lennox', *Musicae Scientiae*, 5/2, 2001, pp. 235-256; Davidson, J.W. 'Bodily communication in musical performance', *Musical Communication*, Ed. D.Miell, R.Macdonald & D.J.Hargreaves, (Oxford, Oxford University Press, 2005), pp. 215- 238.
[77] The three dots are part of the title.
[78] Gentle Fire, *Quintet*, HDC, C1193/51 C2.
[79] Davies, Hugh. *Quintet*, scores, HDA.
[80] Stockhausen 1970, op. cit., p.7.
[81] Tortora, Daniela. *Nuova consonanza: trent'anni di musica contemporanea in Italia (1959-1988)* Lucca, Libreria musicale italiana, 1990), p.58.
[82] Dates not known.
[83] Dates not known.
[84] Dates not known.
[85] Emmerson 1991, op. cit., p.182.

[86] Bennett was a contemporary and friend of Cardew; they had both studied at the Royal Academy of Music between 1953 and 1956. In 1956 Bennett and Cardew gave the UK premiere of Boulez's *Structures, Book I* (1952) at the Royal Academy of Music. Subsequently Bennett studied with Boulez in Paris for two years.
[87] Cardew, Cornelius. 'Towards an ethic of improvisation', *Cornelius Cardew: A Reader*, (Essex, Copula, 2006), 125-134, p.127.
[88] Palombini 1993, op. cit., p.542.
[89] Cardew 2006, op. cit., p.130.
[90] The American composer Rolf Gehlhaar (1943) succeeded Cardew and Davies in the job.
[91] Skempton, Howard. Private communication, (May 2009).
[92] Cardew, Cornelius. (1961) 'Report on Stockhausen's *Carré*', *The Musical Times*, 102, 1424, (1961), p.619.
[93] In the *February Pieces* preface Cardew said: 'either play each or any of the *February Pieces* separately – start with any section and play round the piece, joining the end to the beginning' (Cardew, Cornelius. *February Pieces*, London, Ed. Peters, [1961], p. 3).
[94] Ibid., p.620.
[95] Tilbury, John. 'Cornelius Cardew', Contact, 26, (1983), p.4.
[96] Cardew 2006, op. cit., p.126.
[97] Ibid, p.131.
[98] Ibid., p.126.
[99] Ibid.
[100] Ibid., p.130.
[101] Cardew, Cornelius. 'A Scratch Orchestra: Draft constitution', *The Musical Times*, 110, 1516, (1969), p.619
[102] Ibid., 617.
[103] Cardew, Cornelius. *Stockhausen Serves Imperialism, and Other Articles*, (London, Latimer New Dimensions, 1974), p.6.

Notes for chapter 4.

[1]Davies, Hugh. Uncatalogued papers, HDA.
[2] Ibid.
[3] Ibid.
[4] Davies quoted by Max Eastley, private communication, (December 2007).
[5] Lachenmann, Helmut. 'Are you listening, or just hearing? Why Mahler? meets Helmut Lachenmann', (Royal Festival Hall, London, 24 October 2010).
[6] Lachenmann quoted in Heathcote, Abigail. 'Sound structures, transformations, and broken magic an interview with Helmut Lachenmann', *Contemporary Music: Theoretical and Philosophical Perspectives*, Ed. I. Deliège, M. Paddison, (Aldershot, Ashgate, 2010), p.340.
[7] Ibid., p.332.
[8] Schaeffer on the other hand was more concerned with the analysis of such sounds via recording.
[9] Davies, Hugh. Uncatalogued papers, HDA.
[10] The Paris studio is a noticeable exception here.
[11] Davies quoted in Roberts, David. 'The A-Z of Hugh Davies', *Crafts*, 37, (1979), p.31.
[12] Ibid.
[13] *Sounds Unusual*, concert programme, Royal Festival Hall foyer, (2 and 9 July 1988).
[14] Davies, Hugh. Uncatalogued papers, HDA.
[15] Bertoncelli, Riccardo. Gatti, Roberto. 'Intervista di Roberto Gatti e Riccardo Bertoncelli a Hugh Davies', *Trasgressioni sonore,* (festival programme book, Lugano, 1979), p.13.
[16] Davies, Hugh. Private communication, 2004.
[17] Various recordings of this piece are part of the Hugh Davies Collection at the British Library, catalogue numbers C1193/19, C1193/131, C1193/132, and C1193/183.
[18] Davies, Hugh. *Galactic Interfaces*, scores, HDA.
[19] Dates not known.
[20] Dates not known.
[21] Davies, Hugh. Uncatalogued papers, HDA.
[22] Chopin, Henri. Private communication, 2006.
[23] Chopin, Henri, Ed. *OU Sound Poetry An Anthology,* (Italy: Chopin and Alga Marghen, 2002), p.2.
[24] Similar instructions were also inserted in the pages of the original Shozyg I.
[25] Davies, Hugh. 'Shozyg' *Revue OU*, Ed. H. Chopin, 34/35 (Essex, Chopin, 1969).

[26] Davies, Hugh. Uncatalogued papers, HDA.
[27] Davies, Hugh. 'Making and performing simple electroacoustic instruments', *Electronic Music for Schools*, Ed. R. Orton, (Cambridge, Cambridge University Press, 1981), p.164.
[28] Tilbury, J. *Shozyg I* (Version 2), HDC, C1193/79 C5.
[29] Davies, Hugh. Uncatalogued papers, HDA.
[30] Maconie, Robin. *Stockhausen*, (Oxford, Oxford University Press, 1976), p.329.
[31] Ibid.
[32] Ibid.
[33] Davies 2002, op. cit., p.52.
[34] Roberts 1979, op. cit., p.35
[35] Dates not known.
[36] Woodman, Christopher. 'Re: The Eargong', Email to me, lupin469@hotmail.com, (4 August 2013).
[37] Davies 2002. op. cit., p.56.
[38] Ibid.
[39] Tudor, David, interview with Teddy Hultberg, Düsserldorf, 17-18 May 1988, http://davidtudor.org/Articles/hultberg.html, (accessed 17 December 2014)
[40] Ibid.
[41] Davies, Hugh. Uncatalogued papers, HDA.
[42] Ibid.
[43] Ibid.
[44] Ibid.
[45] Ibid.
[46] Ibid.
[47] Davies 1981, op. cit., p.165.
[48] Davies, H. Uncatalogued papers, HDA.
[49] Ibid.
[50] Furnival quoted in Davies. Uncatalogued papers, HDA.
[51] Davies, Hugh. Uncatalogued papers, HDA.
[52] Davies, Hugh. Uncatalogued papers, HDA.
[53] Davies 2002, op. cit., p.57.
[54] Davies 2002, op. cit., p.57.
[55] Davies, Hugh. Uncatalogued papers, HDA.
[56] Davies, Hugh. Uncatalogued papers, HDA.
[57] Ibid.
[58] More about this instrument will be said in chapter 6.
[59] Dates not known.
[60] Dates not known.
[61] The Beaufort scale measures wind speed and is divided in thirteen categories, from force 0 (calm) to 12 (hurricane force). Force 5 and 6 indicate respectively 'fresh breeze' and 'strong breeze' covering a range of speeds between 29 km/h and 13.8 m/s.
[62] Eastley, Max. Uncatalogued papers, HDA.
[63] Ibid.
[64] Ibid.
[65] Toop, David. Uncatalogued papers, HDA.
[66] Ibid.
[67] Time Out exhibition review, HDA.
[68] Anonymous. 'If you can't afford a Steinway', HDA.
[69] Ibid.
[70] Stewart. Madeau quoted in Oliver, Cordelia, *The Guardian*, 16 December 1975.
[71] Davies quoted in Bertoncelli and Gatti 1979, op. cit., p.11.
[72] Stranded nylon is the most popular material used in synthetic-core strings violins, steel-core strings are another option.
[73] *Visiting Hugh Davies* (Klapper, UK, 1991).
[74] Davies, Hugh 2002, op. cit., pp.19-20.
[75] Gale, Matthew. '*Objet trouvé*', *Grove Art Online*, http://www.oxfordartonline.com/subscriber/article/grove/art/T063150, (accessed 28 April 2012).
[76] Anonymous. 'The Richard Mutt case'. *The Blind Man*, 2, (1917), p. 5.
[77] Norton, Louise. (1917), 'Buddha of the bathroom' in *The Blind Man*, 2, (1917), p. 6.

[78] Judovitz, Dalia. *Unpacking Duchamp: Art in Transit*, (Berkeley, University of California Press, 1995), p.34.
[79] Ibid.
[80] Camfield, William, A. (1990) 'Marcel Duchamp's Fountain: Its history and aesthetics in the context of 1917', *Marcel Duchamp: Artist of the Century,* Ed. R. Kuenzli, F. Naumann, (Cambridge, Massachusetts, MIT Press, 1990), p.75.
[81] Norton 1917, op. cit., p.6.
[82] Ibid.
[83] Duchamp, Marcel. *The Writings of Marcel Duchamp*, Ed. P. Elmer, M. Sanouillet, (New York, Da Capo Press, 1989), p.142.
[84] Duchamp, Marcel 'The creative act', *Marcel Duchamp*, Ed. R. Lebel, (New York, Grove Press, 1959), p.78.
[85] Ibid.
[86] Ibid. From 1950s onwards however Duchamp dismissed the emphasis on the aesthetic appreciation of the object itself in favour of a version that preferred concentrating on the act of choosing – devoid of taste (the so-called 'anesthesia'), a concept that would be influential in Cage's philosophy of music.
[87] Davies quoted in Roberts 1979, op. cit., p.9.
[88] Newall, Diana. Pooke, Grant. *Art History: The Basics*, (London, Routledge, 2008), pp.176-177.
[89] Newall and Pooke 2008, op.cit., pp.167-168.
[90] Huebler, Douglas. 'Untitled Statement', *Theories and Documents of Contemporary Art : A Sourcebook of Artists' Writings*, Ed. K. Stiles, H. P. Selz, (Berkley, University of California Press, 1996), p.840.
[91] The sentence could mean "art is non-art', possibly 'art is not art'.
[92] Davies, Hugh. Correspondence, HDA.
[93] Ronte, Dieter. 'Nam June Paik's early works in Vienna', *Nam June Paik*, Ed. J. G. Hanardt, (New York, Whitney Museum of American Art, 1982), p.74.
[94] Yates, Peter. (1963) *High Fidelity*, Vol.13, Issue 2, July, pg. 8
[95] Kosugi quoted in Toop, David. *Haunted Weather: Music, Silence, and Memory*, (London, Serpent's Tail, 2004), p.122.
[96] Young, La Monte. *Composition 1960 #5*, *An Anthology*, (New York, Heiner Friedrich, 1963), p. 116.
[97] Davies, Hugh. *Music for Strings,* Scores, HDA.
[98] Schaeffer, Pierre. *Traité des objets musicaux : essai interdisciplines*, (Paris, Editions du Seuil, 1966), p.459.
[99] Ferrari quoted in Drott, Eric 'The politics of Presque Rien', *Sound Commitments: Avant-garde Music and the Sixties*, Ed. R. Adlington, (Oxford, Oxford University Press, 2009), p.153.
[100] Ibid.

Notes for chapter 5.

[1] Davies 2002, op. cit., p.57.
[2] Davies 1981, op. cit., p.172.
[3] Davies, Hugh. *Music for Bowed Diaphragms*, scores, HDA.
[4] Ibid.
[5] Davies, private communication, 2003.
[6] Iges, José. 'Realidades artísticas resonantes', *Resonancias*, (exhibition catalogue, Málaga City Council, 2000), p.11.
[7] Leopold, Aldo. 'The land ethic', *A Sand County Almanac and Sketches Here and There* (Oxford: Oxford University Press, 1987), p.204.
[8] Routley, Richard. 'Is there a need for a new, an environmental ethic?', *Proceedings of the 15th World congress of Philosophy*, 1, Sophia, Bulgaria, (Sophia, Bulgaria, Sophia Press, 1973), pp. 205-210.
[9] Rees, Ronald. 'The scenery cult, changing landscape tastes over three centuries', *Landscape Research*, 19, (1975), p.41.
[10] Kant, Immanuel. (2000) *Critique of the Power of Judgment*, Ed. P. Guyer, (Cambridge, Cambridge University Press, 2000), pp.217-218.
[11] Thoreau, Henry D. *Walden; or, Life in the Wood*, (Mineola, New York, Dover Publications, 1995), pp.205-206.
[12] White, Lynn Jr. 'The historical roots of our ecological crisis', *Science*, 155, (1967), pp.1204-1205.
[13] Cage quoted by Bock, Jannika. *Concord in Massachusetts, Discord in the World, The Writings of Henry Thoreau and John Cage*, (Peter Lang, Frankfurt, 2008), p.1.
[14] Cage 2009, op. cit., p.10.
[15] ibid., p.108.

[16] Cage quoted in Zimmermann, Walter. *Desert Plants: Conversation with 23 American Musicians*, (Ann Arbor, University of Michigan Press, 1976), p.25.
[17] Davies, Hugh. *Meldoci Gestures*, scores, HDA.
[18] At present there is no further information on how Davies put these pieces together after notating them, nor about his processes once they were in symbols suitable for traditional music.
[19] Cage, quoted in Davies, Hugh. *Meldoci Gestures of the British Isles*, scores, HDA.
[20] Davies, Hugh. *Natural Images*, scores, HDA.
[21] The fluidity in establishing acoustic identities through processing techniques has been employed by many other electroacoustic composers, most notably Trevor Wishart (1946-) in *Red Bird* (1973-77).
[22] Davies 2002, op. cit., p.8.
[23] Cage made a similar sort of classification of sounds for *Williams Mix*, and by R. Murray Schafer in his book *The Soundscape*.
[24] Davies 2002, op. cit., p.38.
[25] Ibid., p.40.
[26] Ibid., p.39.
[27] Bell 2009, op. cit., p.237.
[28] Davies 2002, op. cit., p.45.
[29] Ibid., p.44.
[30] Ibid., p.45.
[31] Ibid., p.47.
[32] Ibid., p.41.
[33] Ibid., pp.41-42.
[34] Davies, Hugh. *Music for Car Horns*, scores, HDA.
[35] Davies 2002, op. cit., p.47.
[36] Ibid., p.46.
[37] Davies, Hugh. *Environmental Recording Project*, scores, HDA.
[38] Davies, Hugh. *Unusual Sounds on the Campus*, scores, HDA.
[39] Ibid.
[40] O'Callaghan, Casey. *Sounds*, (Oxford, Oxford University Press, 2010), p.98.
[41] Schafer Murray R. *The Tuning of the World*, (New York: Knopf, 1977), p.73.
[42] Davies, Hugh. Uncatalogued papers, HDA.
[43] Concert programme for *Sounds Unusual*, HDA.
[44] Davies, Hugh. *The Search for the Music of the Spheres*, scores, HDA.
[45] Davies, Hugh. *Kangaroo*, scores, HDA.
[46] Davies, Hugh. *Vom Ertrunkenen Mädchen*, scores, HDA.
[47] Davies, Hugh. *Haiku*, scores, HDA.
[48] Dates not known; Jeanneret was a member of the Option Band.
[49] Davies, Hugh. *Raisonnements*, scores, HDA.
[50] Dates not known.
[51] Ibid.
[52] Ibid.
[53] Ibid.
[54] Davies, Hugh. *The Pianoforte*, scores, HDA.

Notes for the conclusions.

[1] Oram 1972, op. cit., p.79.
[2] Incidentally Davies had devised the Feelie Boxes to be housed in public places like doctor's waiting rooms. However, it is rather in the principle of interaction with these works, and in their disruption of the conventions of performance that these pieces can be considered to be influenced by Fluxus. Furthermore it is clear that here Vautier refers to paintings that are hung on walls as furniture.
[3] Vautier quoted in Kreihsl, Michael. Kasperak, Peter. Ed. *Fluxus Subjective*, (Vienna, Galerie Krinzinger, 1990), p.5.
[4] Davies quoted in Sommerich, Phillip. 'Slice of action', *Ham&High*, 21 May 1982.

Appendix 1.

Documents from the Hugh Davies Archive.



Figure 34. Worcester College, Oxford, (photograph: my own).



Figure 35. Worcester College, Oxford, (photograph: my own).



Figure 36. Worcester College, Oxford, (photograph: my own).



Figure 37. Worcester College, Oxford, (photograph: my own).

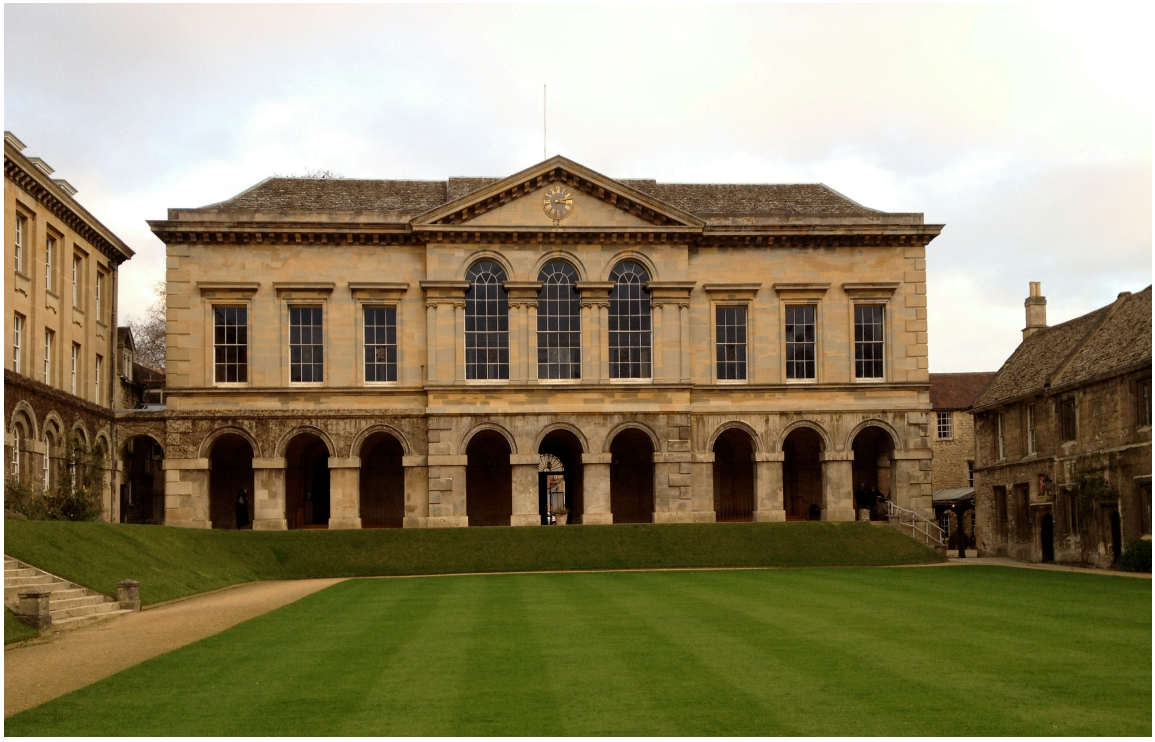
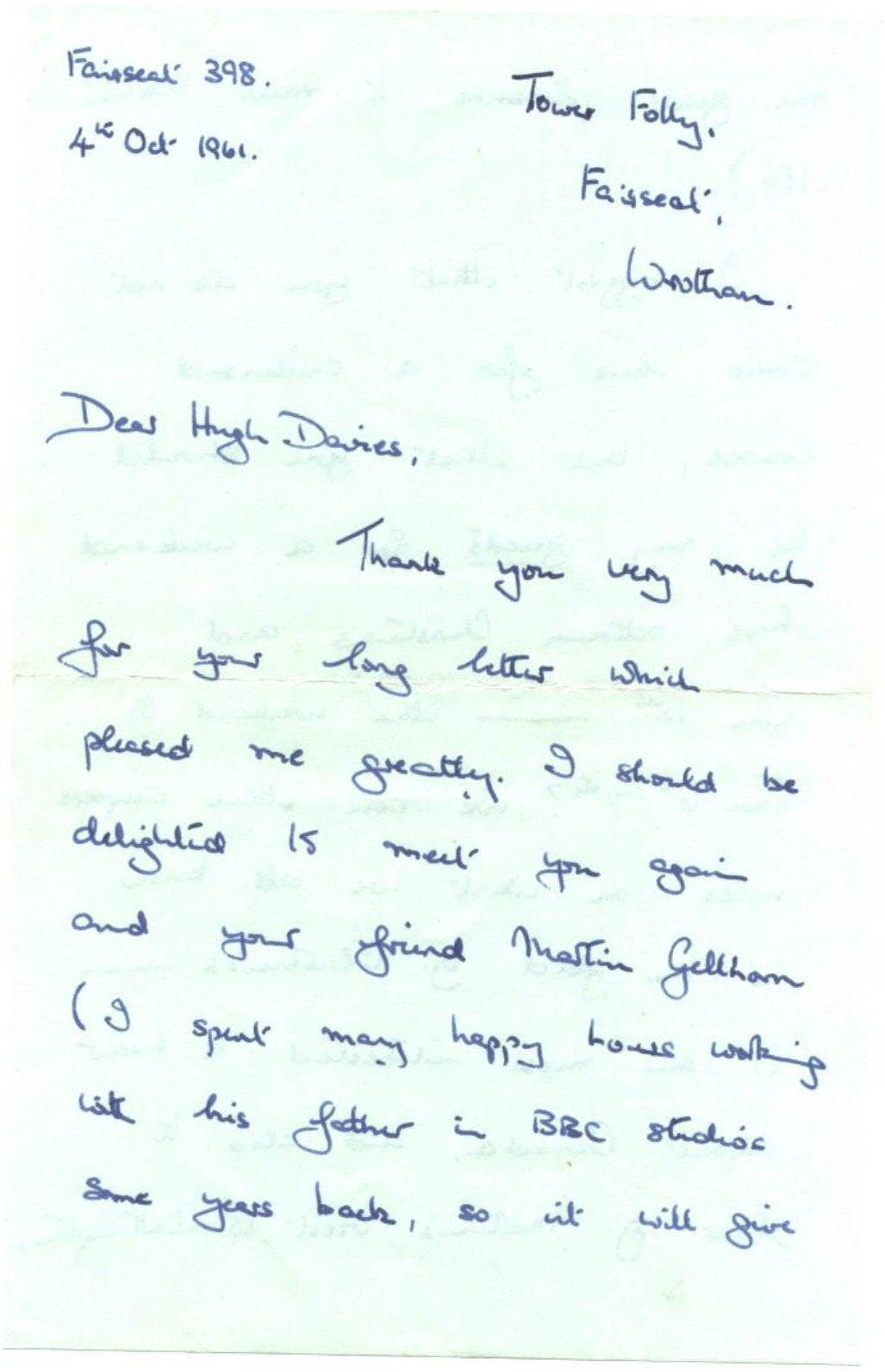


Figure 38. Worcester College, Oxford, (photograph: my own).



Figure 39. The Oxford Playhouse Theatre, close to Worcester College, Oxford (photograph: my own).



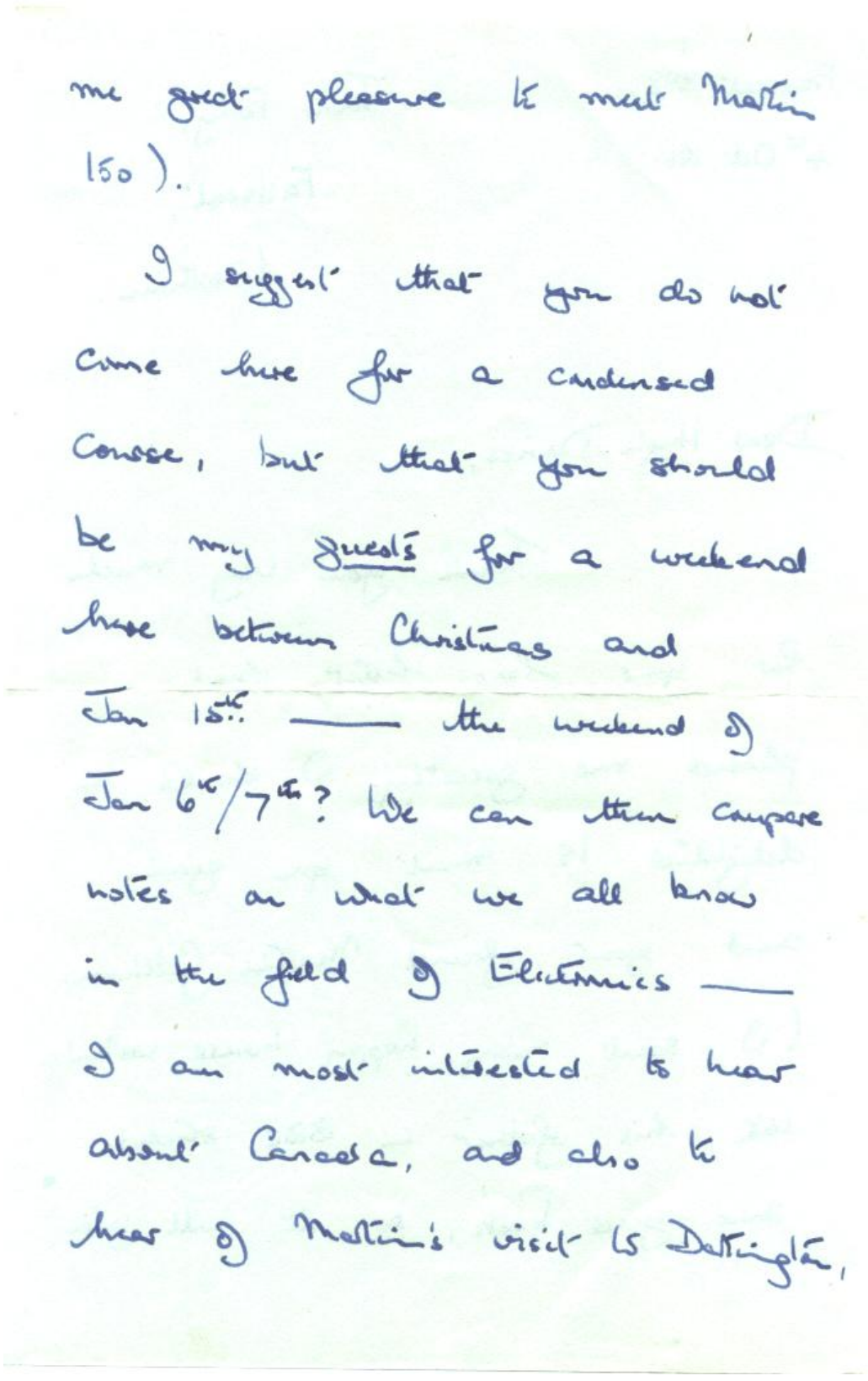
Faisseal 398.
4th Oct 1961.

Tower Folly,
Faisseal,
Wootton.

Dear Hugh Davies,

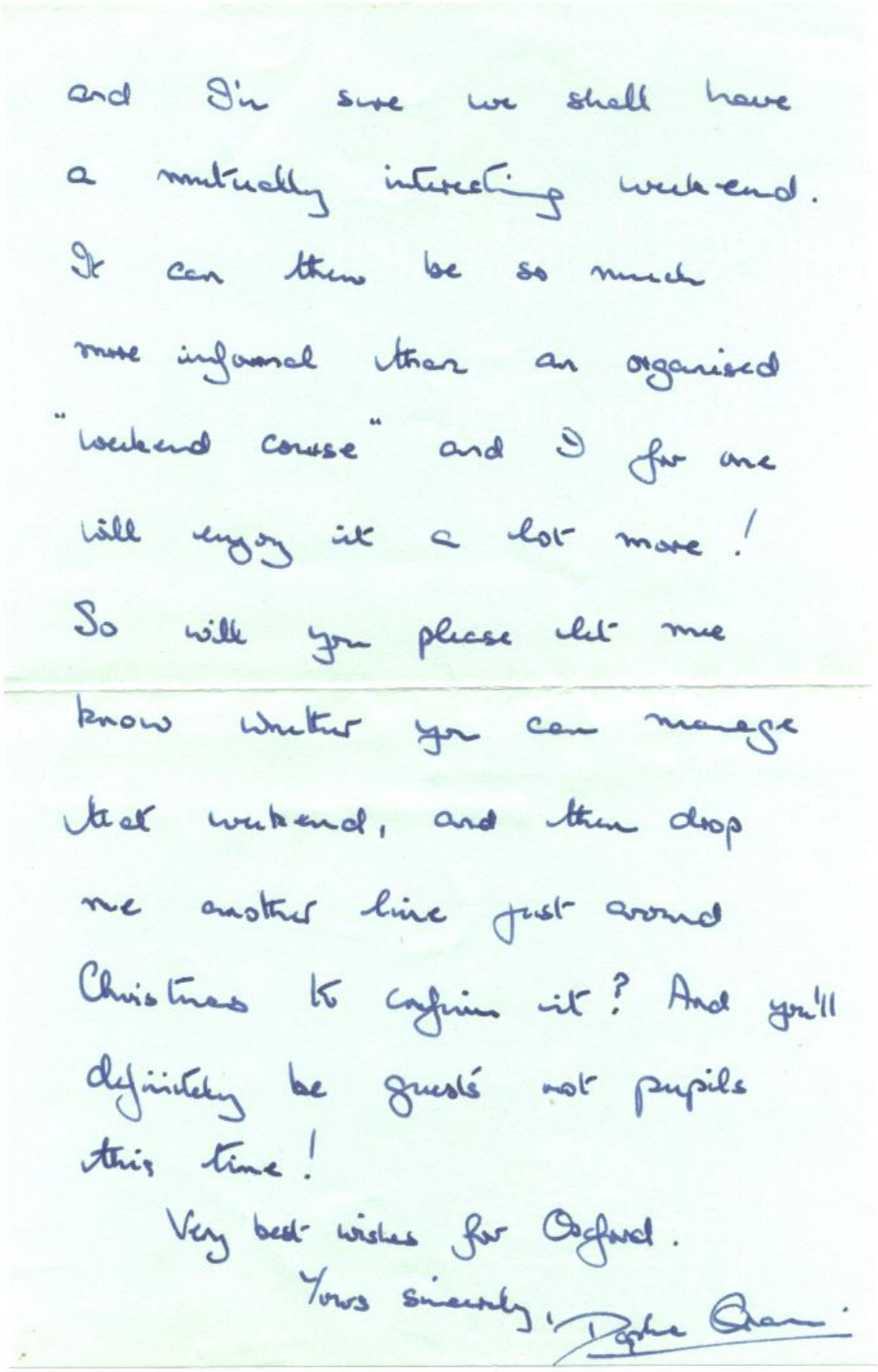
Thank you very much for your long letter which pleased me greatly. I should be delighted to meet you again and your friend Martin Gellhorn (I spent many happy hours working with his father in BBC studios some years back, so it will give

Figure 40. Oram's first letter to Davies, HDA, p. 1.


me great pleasure to meet Martin
Ryle).

I suggest that you do not
come here for a condensed
course, but that you should
be my guests for a weekend
here between Christmas and
Jan 15th —— the weekend of
Jan 6th/7th? We can then compare
notes on what we all know
in the field of Electronics ——
I am most interested to hear
about Canada, and also to
hear of Martin's visit to Darlington,

Figure 41. Oram's first letter to Davies, HDA, p.2.



and I'm sure we shall have
a mutually interesting weekend.
It can then be so much
more informal than an organised
"weekend course" and I for one
will enjoy it a lot more!
So will you please let me
know whether you can manage
that weekend, and then drop
me another line just around
Christmas to confirm it? And you'll
definitely be guests not pupils
this time!
Very best wishes for Oxford.
Yours sincerely, Daphne Oram.

Figure 42. Oram's first letter to Davies, HDA, p.3.

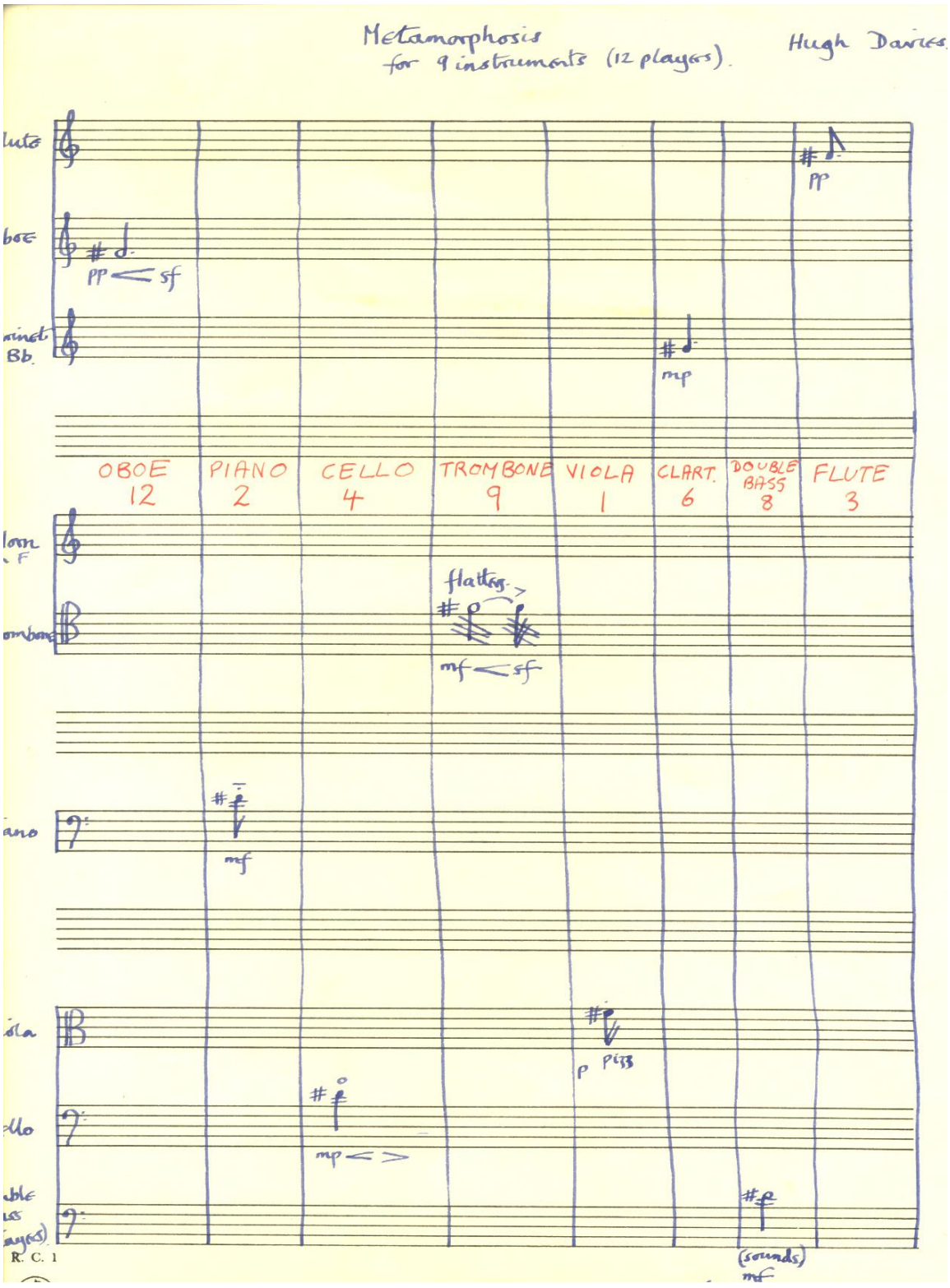


Figure 43. Score for *Metamorphosis*, HDA, p.1.

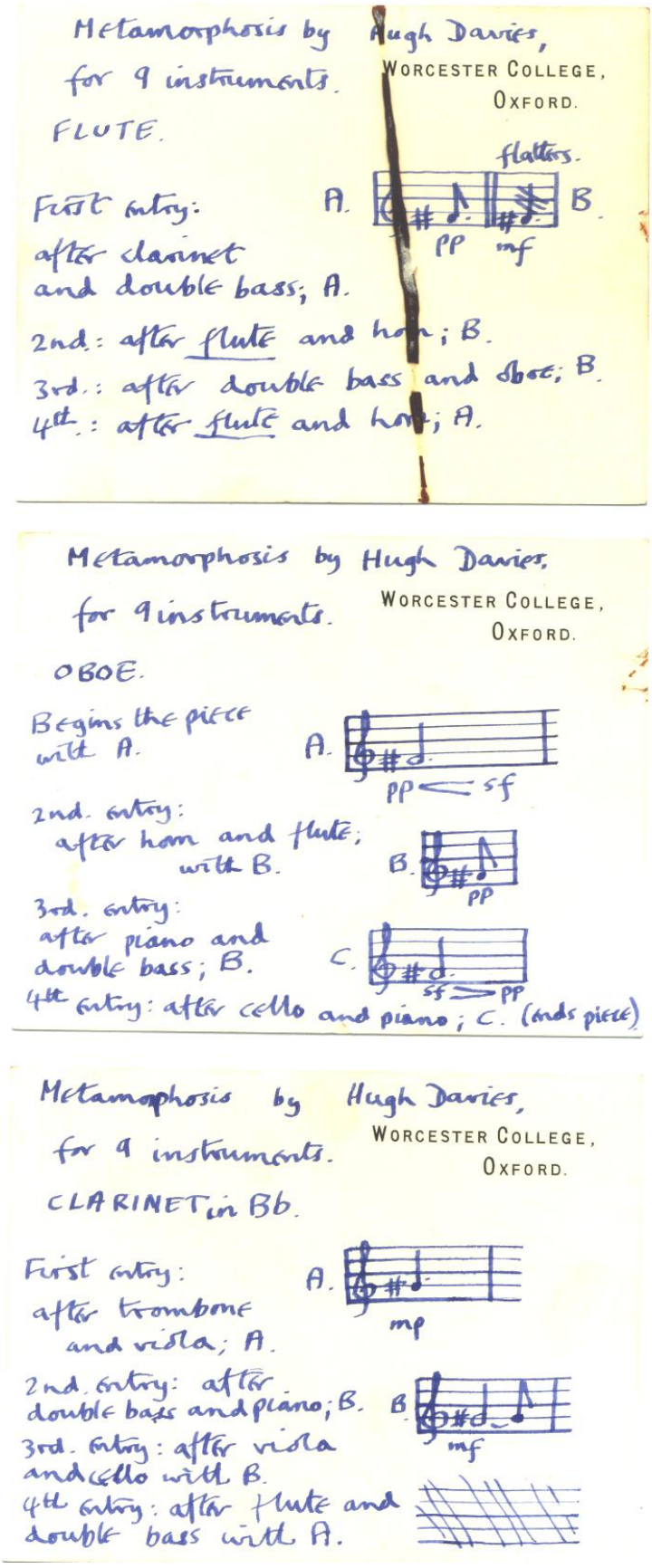


Figure 44. Parts for *Metamorphosis*, HDA.

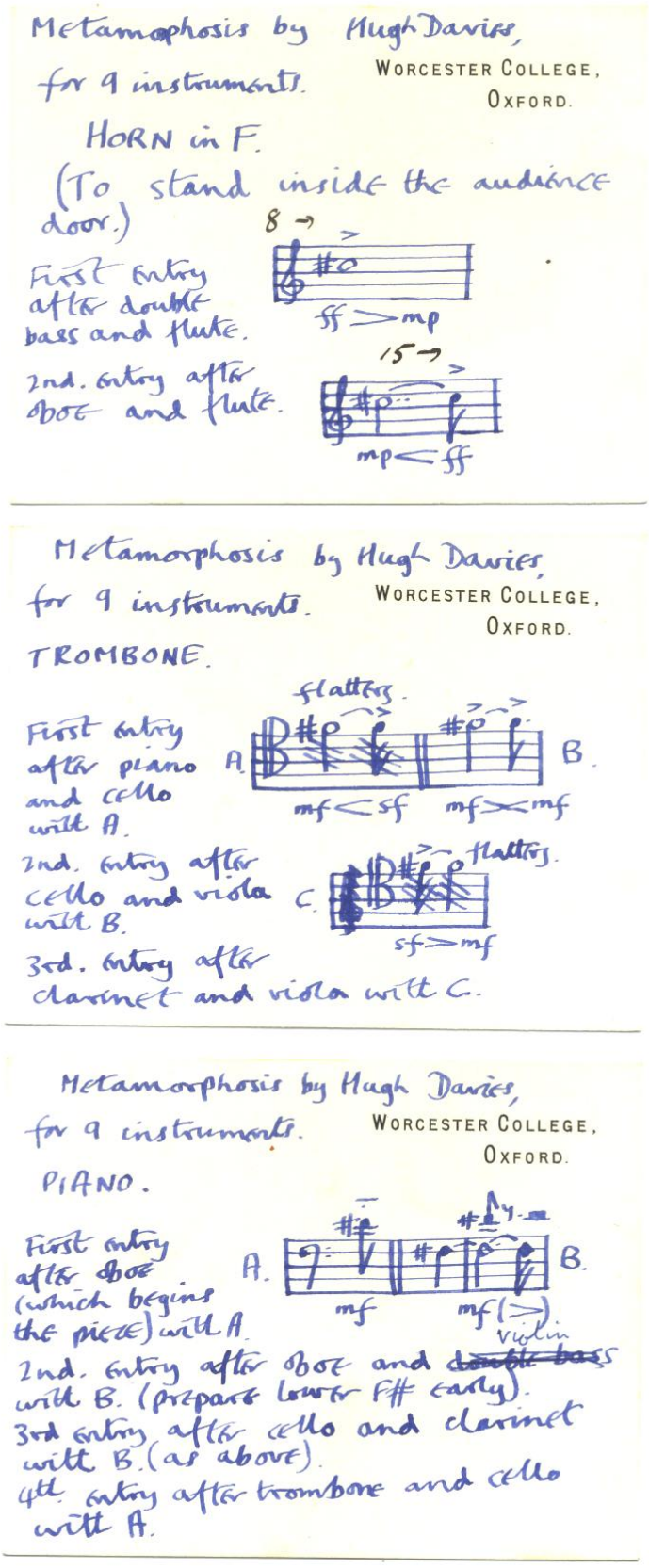


Figure 45. Parts for *Metamorphosis*, HDA.

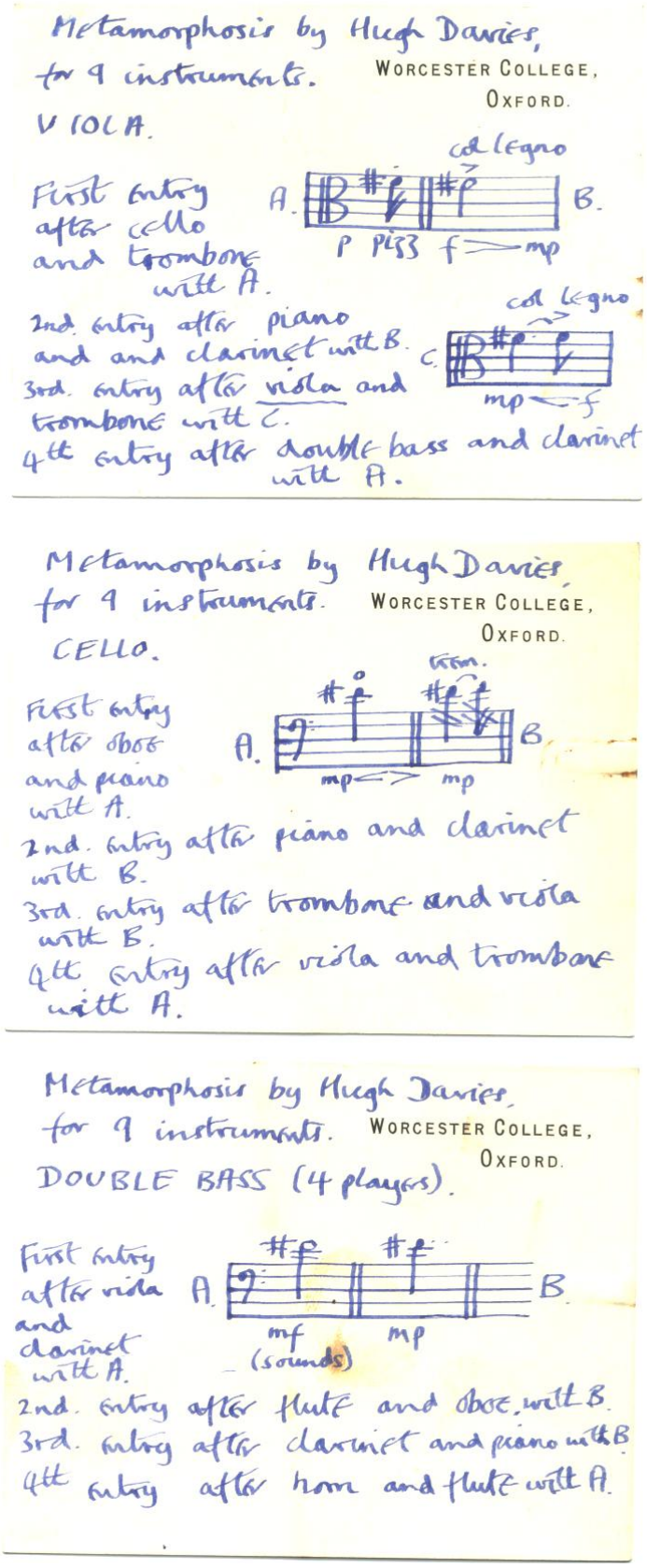


Figure 46. Parts for *Metamorphosis*, HDA.

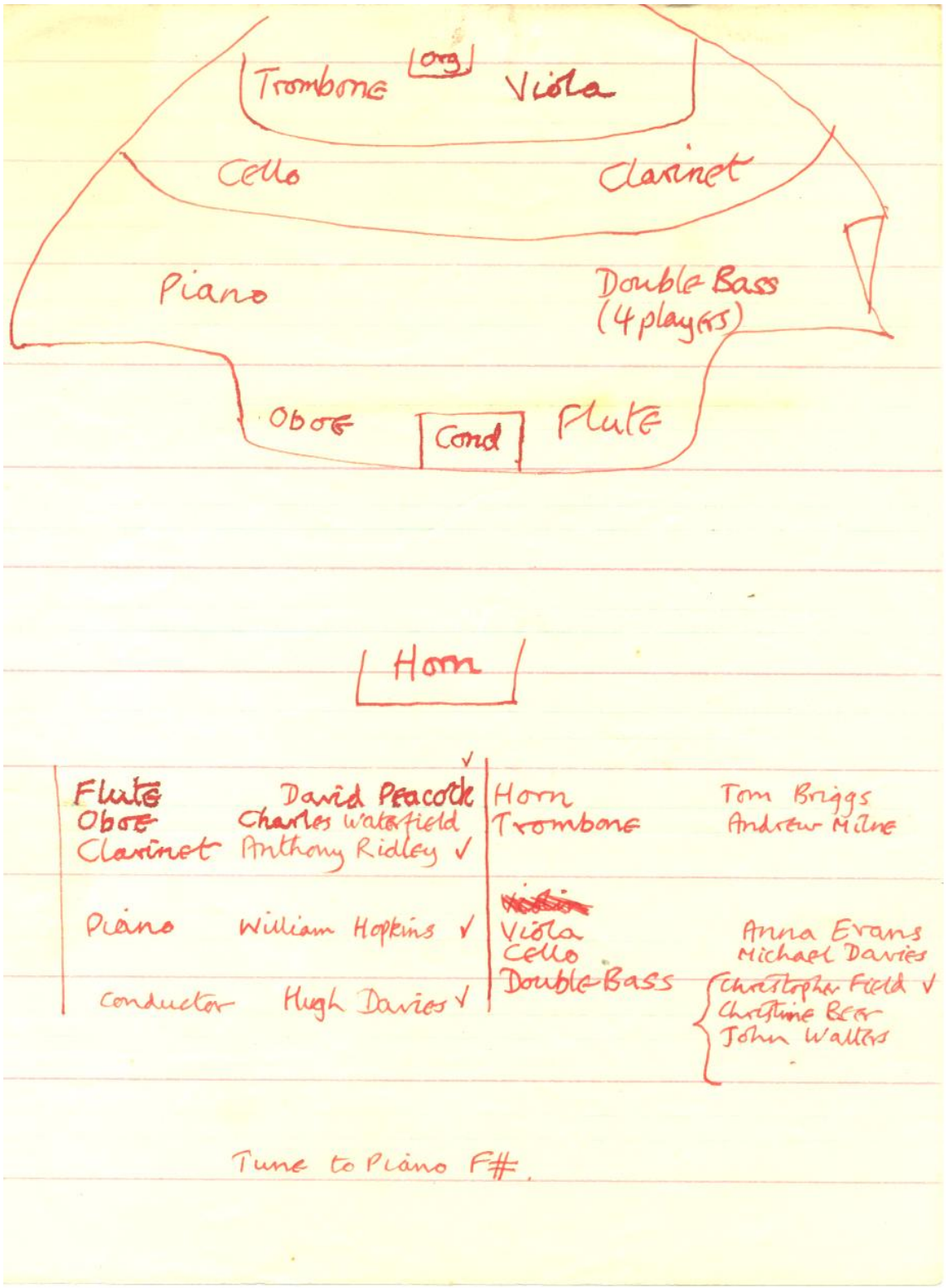


Figure 47. Layout of instruments for *Metamorphosis*, HDA.

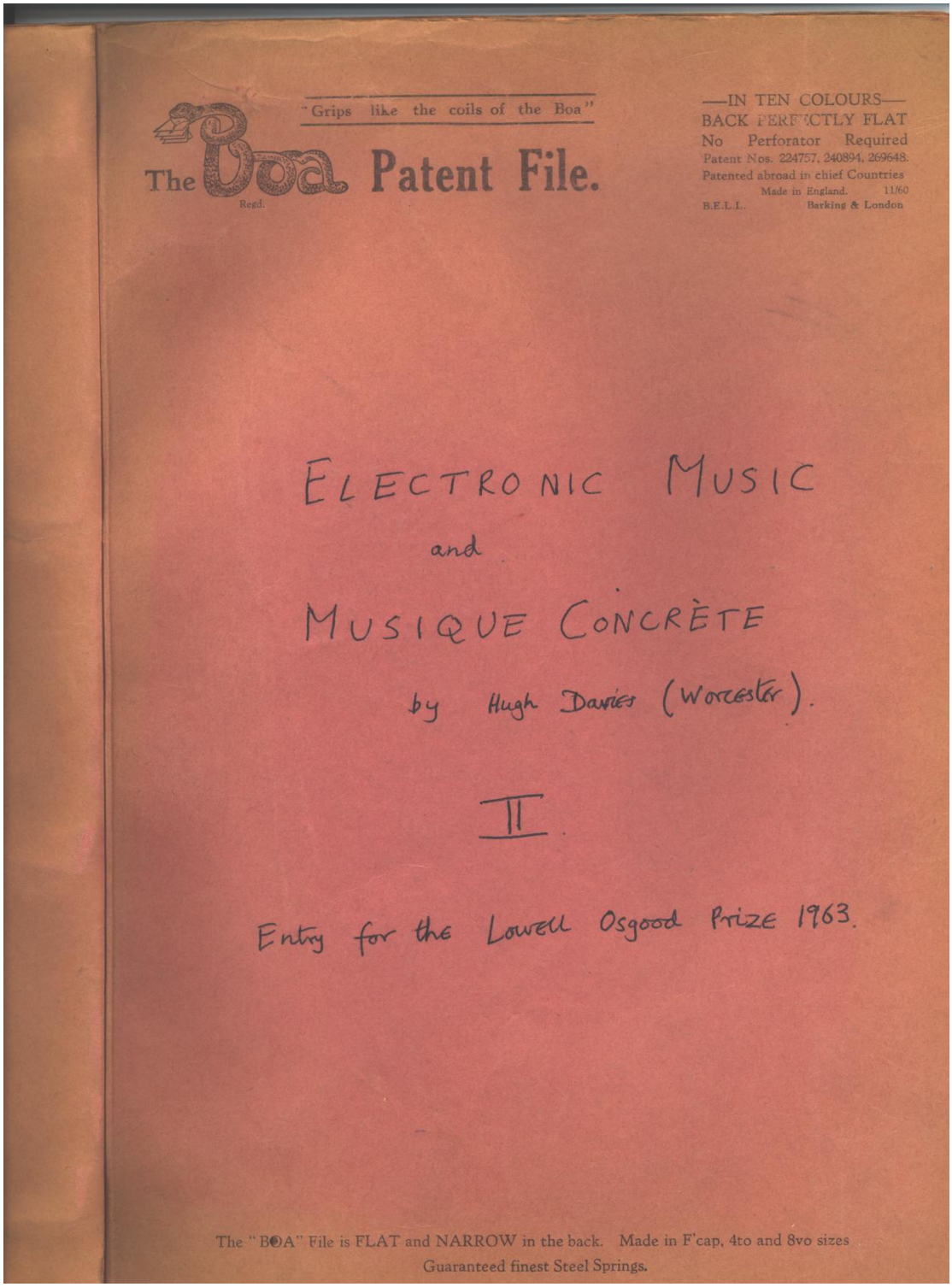
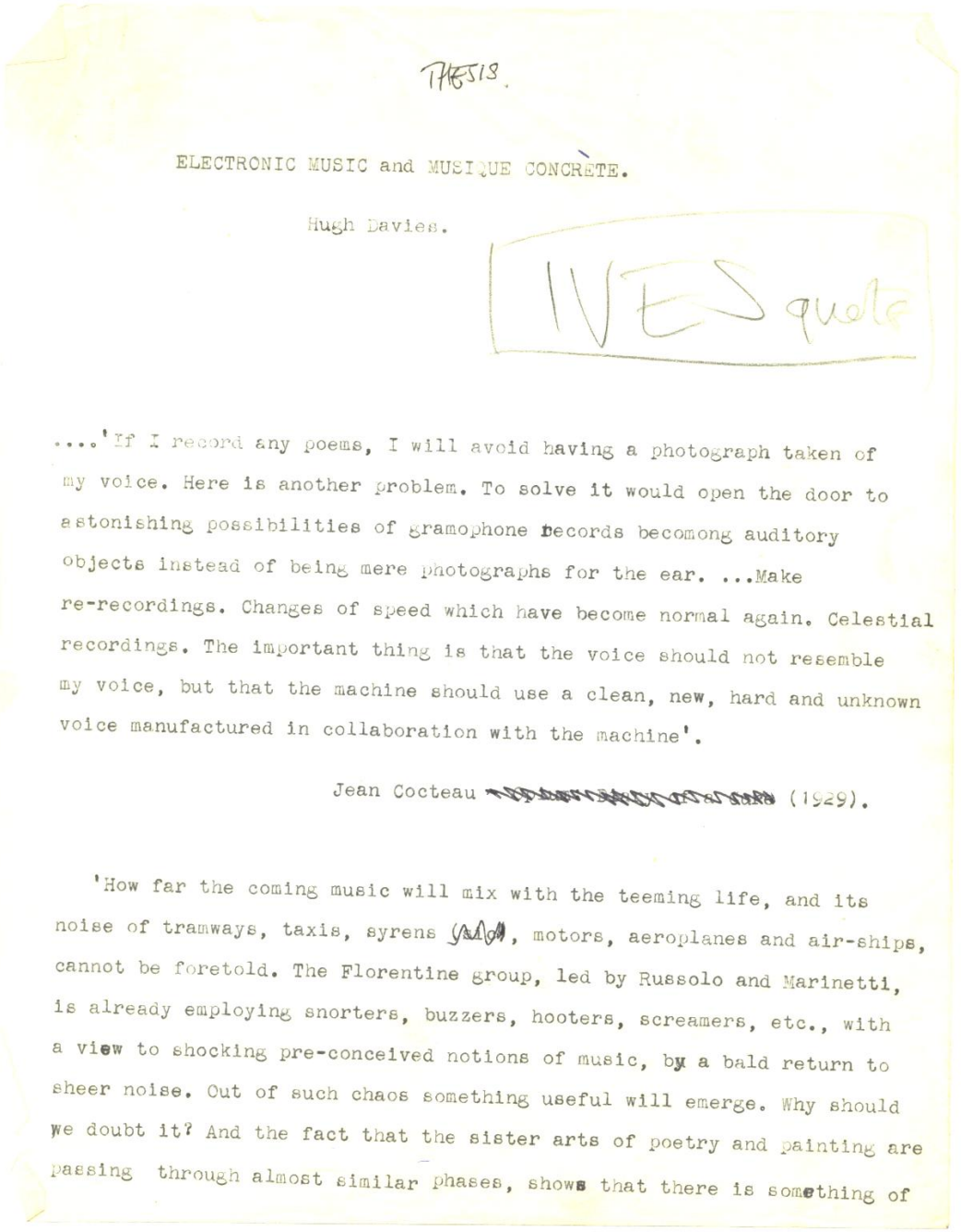


Figure 48. Cover of Davies's undergraduate dissertation, HDA.



THESIS.

ELECTRONIC MUSIC and MUSIQUE CONCRÈTE.

Hugh Davies.

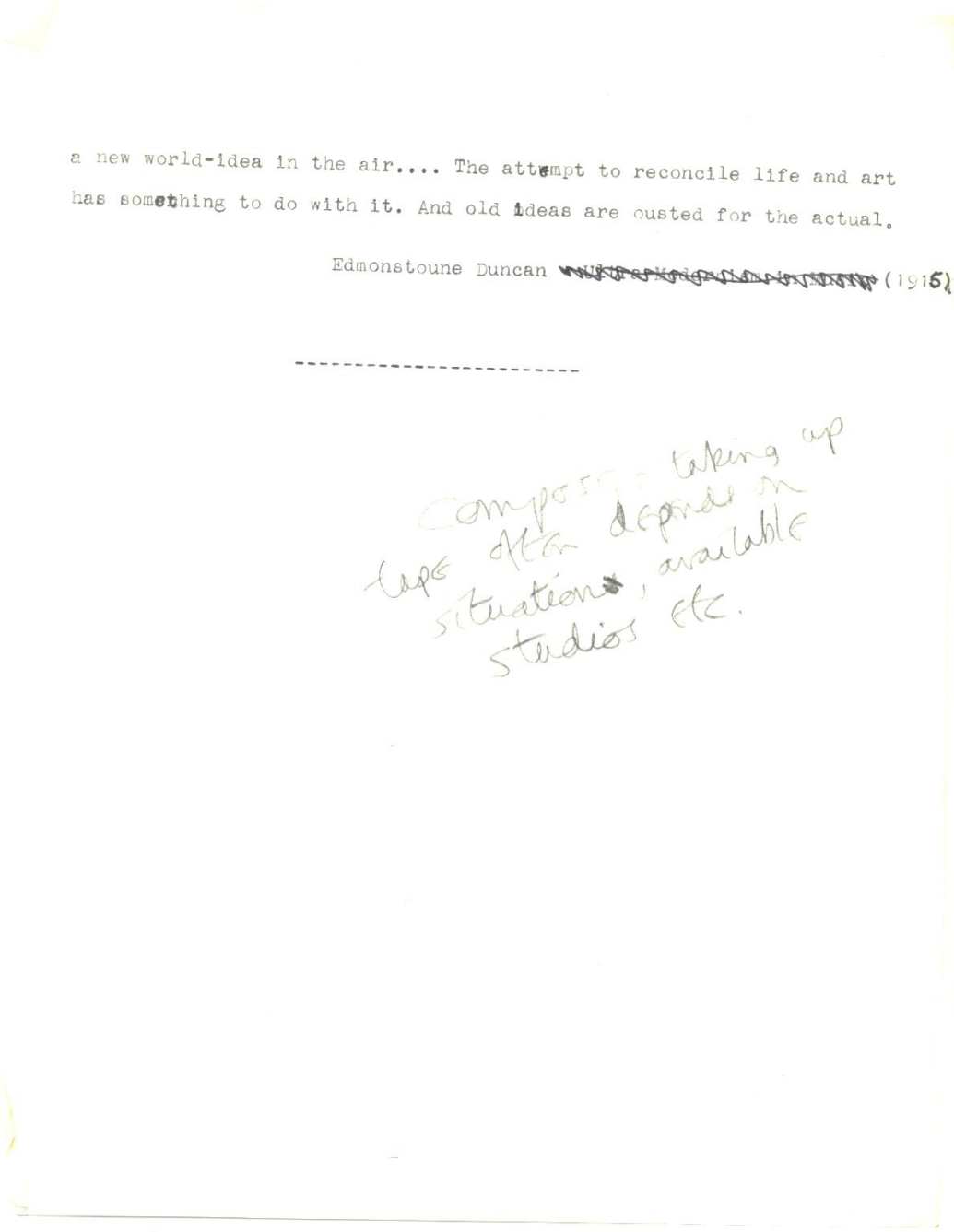
IVES quote

....'If I record any poems, I will avoid having a photograph taken of my voice. Here is another problem. To solve it would open the door to astonishing possibilities of gramophone records becomong auditory objects instead of being mere photographs for the ear. ...Make re-recordings. Changes of speed which have become normal again. Celestial recordings. The important thing is that the voice should not resemble my voice, but that the machine should use a clean, new, hard and unknown voice manufactured in collaboration with the machine'.

Jean Cocteau [redacted] (1929).

'How far the coming music will mix with the teeming life, and its noise of tramways, taxis, syrens [redacted], motors, aeroplanes and air-ships, cannot be foretold. The Florentine group, led by Russolo and Marinetti, is already employing snorters, buzzers, hooters, screamers, etc., with a view to shocking pre-conceived notions of music, by a bald return to sheer noise. Out of such chaos something useful will emerge. Why should we doubt it? And the fact that the sister arts of poetry and painting are passing through almost similar phases, shows that there is something of

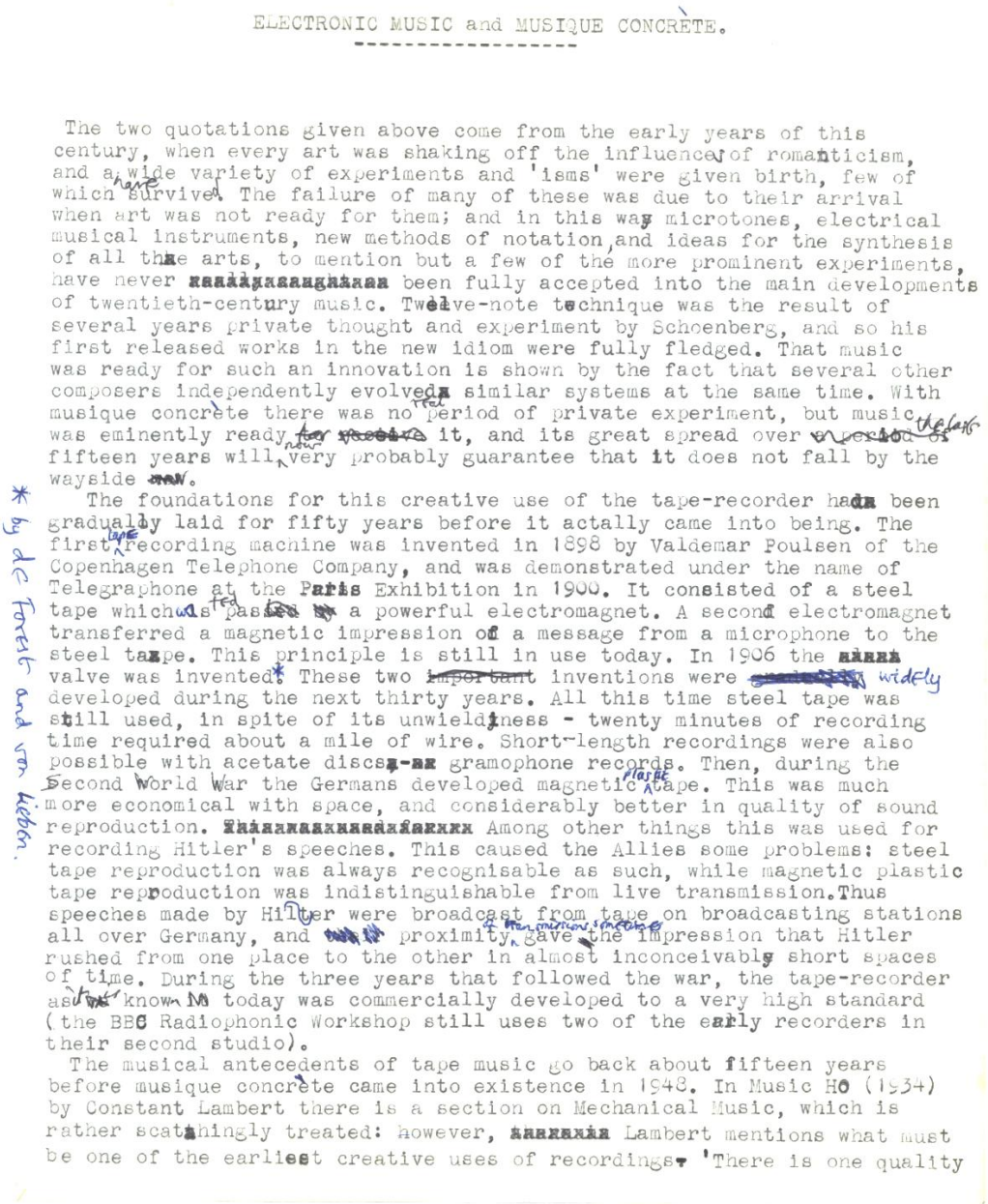
Figure 49. Davies's undergraduate dissertation, HAD, p.1.


a new world-idea in the air.... The attempt to reconcile life and art has something to do with it. And old ideas are ousted for the actual.

Edmonstoune Duncan [redacted] (1915)

Composition taking up tape often depends on situations available studios etc.

Figure 50. Davies's undergraduate dissertation, HDA, p.2.



ELECTRONIC MUSIC and MUSIQUE CONCRÈTE.

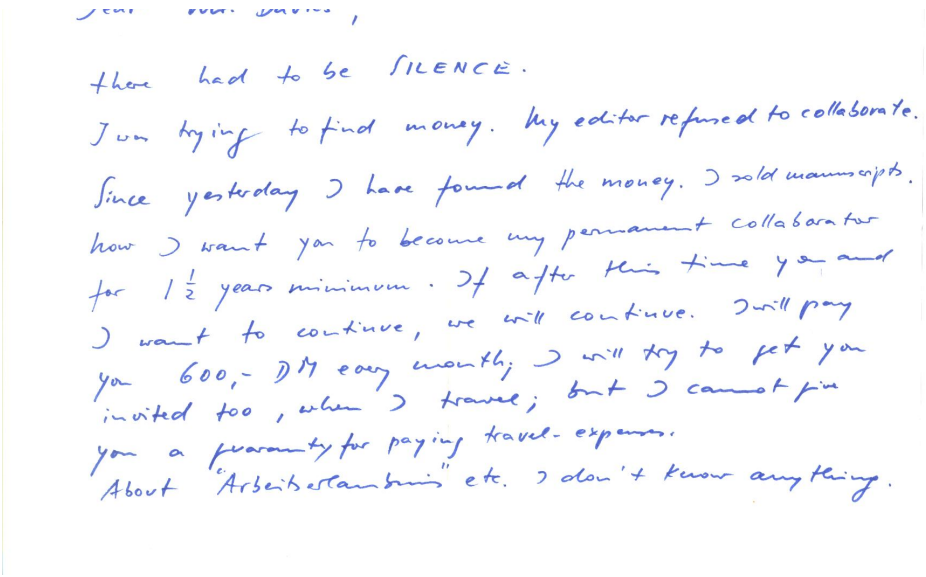
The two quotations given above come from the early years of this century, when every art was shaking off the influence of romanticism, and a wide variety of experiments and 'isms' were given birth, few of which survive. The failure of many of these was due to their arrival when art was not ready for them; and in this way microtones, electrical musical instruments, new methods of notation, and ideas for the synthesis of all the arts, to mention but a few of the more prominent experiments, have never been fully accepted into the main developments of twentieth-century music. Twelve-note technique was the result of several years private thought and experiment by Schoenberg, and so his first released works in the new idiom were fully fledged. That music was ready for such an innovation is shown by the fact that several other composers independently evolved similar systems at the same time. With musique concrète there was no period of private experiment, but music was eminently ready for it, and its great spread over the last fifteen years will very probably guarantee that it does not fall by the wayside.

The foundations for this creative use of the tape-recorder had been gradually laid for fifty years before it actally came into being. The first recording machine was invented in 1898 by Valdemar Poulsen of the Copenhagen Telephone Company, and was demonstrated under the name of Telegraphone at the Paris Exhibition in 1900. It consisted of a steel tape which was passed over a powerful electromagnet. A second electromagnet transferred a magnetic impression of a message from a microphone to the steel tape. This principle is still in use today. In 1906 the valve was invented.* These two important inventions were widely developed during the next thirty years. All this time steel tape was still used, in spite of its unwieldiness - twenty minutes of recording time required about a mile of wire. Short-length recordings were also possible with acetate discs and gramophone records. Then, during the Second World War the Germans developed magnetic plastic tape. This was much more economical with space, and considerably better in quality of sound reproduction. Among other things this was used for recording Hitler's speeches. This caused the Allies some problems: steel tape reproduction was always recognisable as such, while magnetic plastic tape reproduction was indistinguishable from live transmission. Thus speeches made by Hitler were broadcast from tape on broadcasting stations all over Germany, and with proximity, gave the impression that Hitler rushed from one place to the other in almost inconceivably short spaces of time. During the three years that followed the war, the tape-recorder as we know it today was commercially developed to a very high standard (the BBC Radiophonic Workshop still uses two of the early recorders in their second studio).

The musical antecedents of tape music go back about fifteen years before musique concrète came into existence in 1948. In Music Ho (1934) by Constant Lambert there is a section on Mechanical Music, which is rather scathingly treated: however, Lambert mentions what must be one of the earliest creative uses of recordings: 'There is one quality

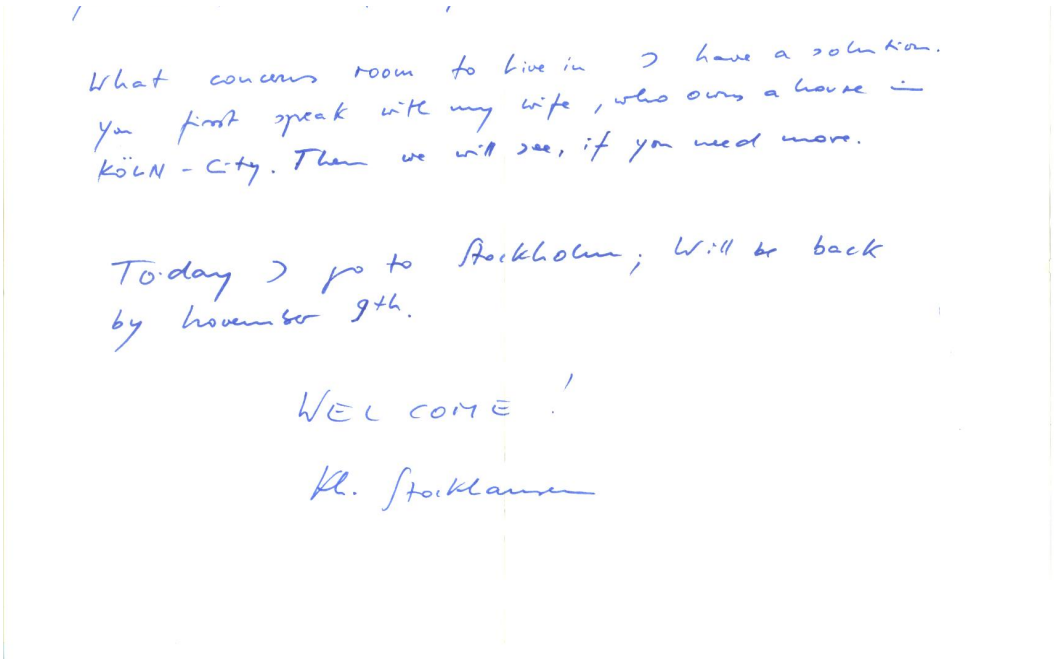
* by de Forest and von Lieben.

Figure 51. Davies's undergraduate dissertation, HAD, p.3.



there had to be SILENCE.
I am trying to find money. My editor refused to collaborate.
Since yesterday I have found the money. I sold manuscripts.
Now I want you to become my permanent collaborator
for 1½ years minimum. If after this time you and
I want to continue, we will continue. I will pay
you 600,- DM every month; I will try to get you
invited too, when I travel; but I cannot give
you a guaranty for paying travel-expenses.
About "Arbeitsplan" etc. I don't know anything.

Figure 52. Karlheinz Stockhausen's letter to Davies confirming his appointment, HDA, right side.



What concerns room to live in I have a solution.
You first speak with my wife, who owns a house in
KÖLN - City. Then we will see, if you need more.

To-day I go to Stockholm; will be back
by November 9th.

WELCOME!

Kl. Stockhausen

Figure 53. Stockhausen's letter to Davies confirming his appointment, HDA, left side.



Figure 54. Envelope of Stockhausen's letter to Davies confirming his appointment, HDA.

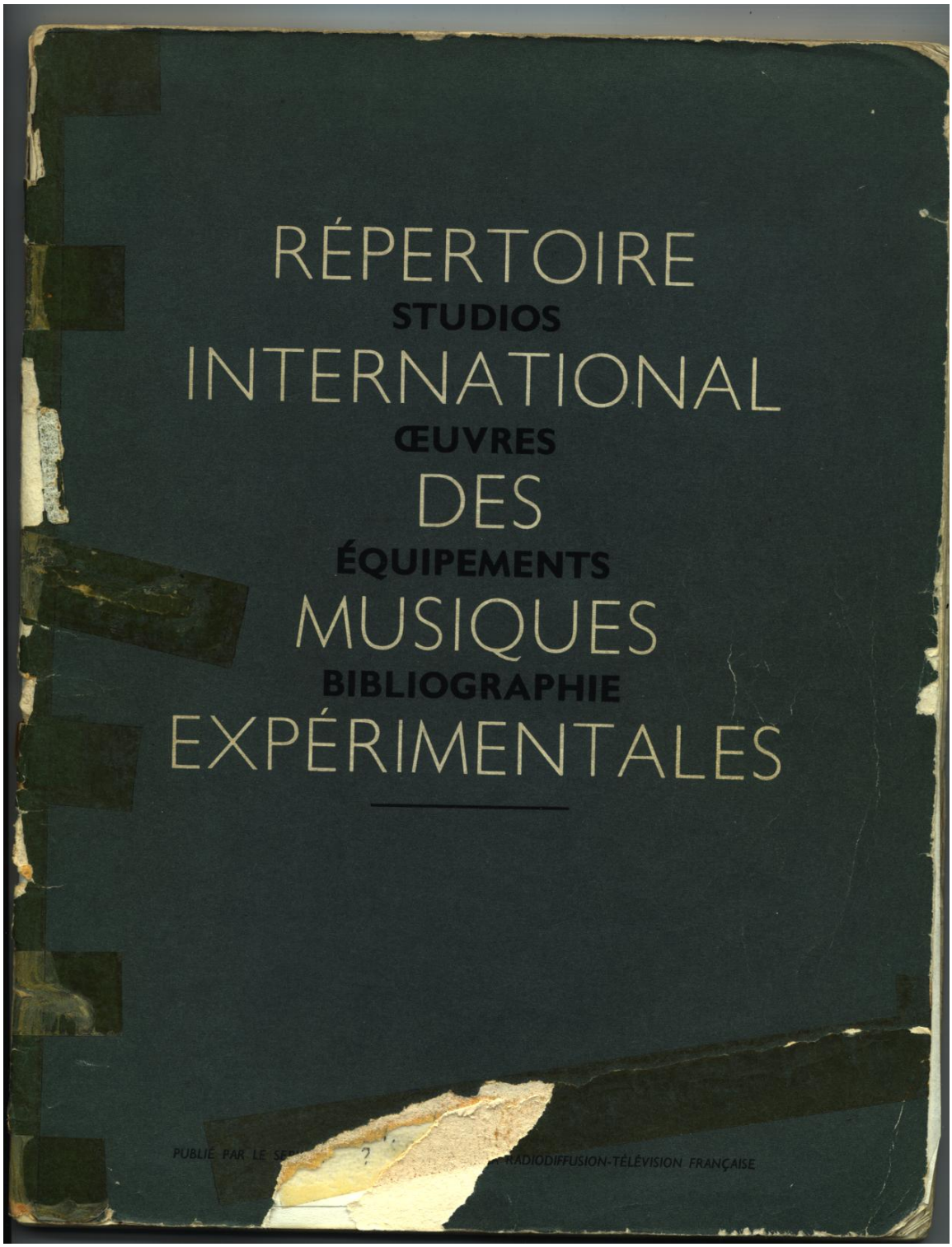
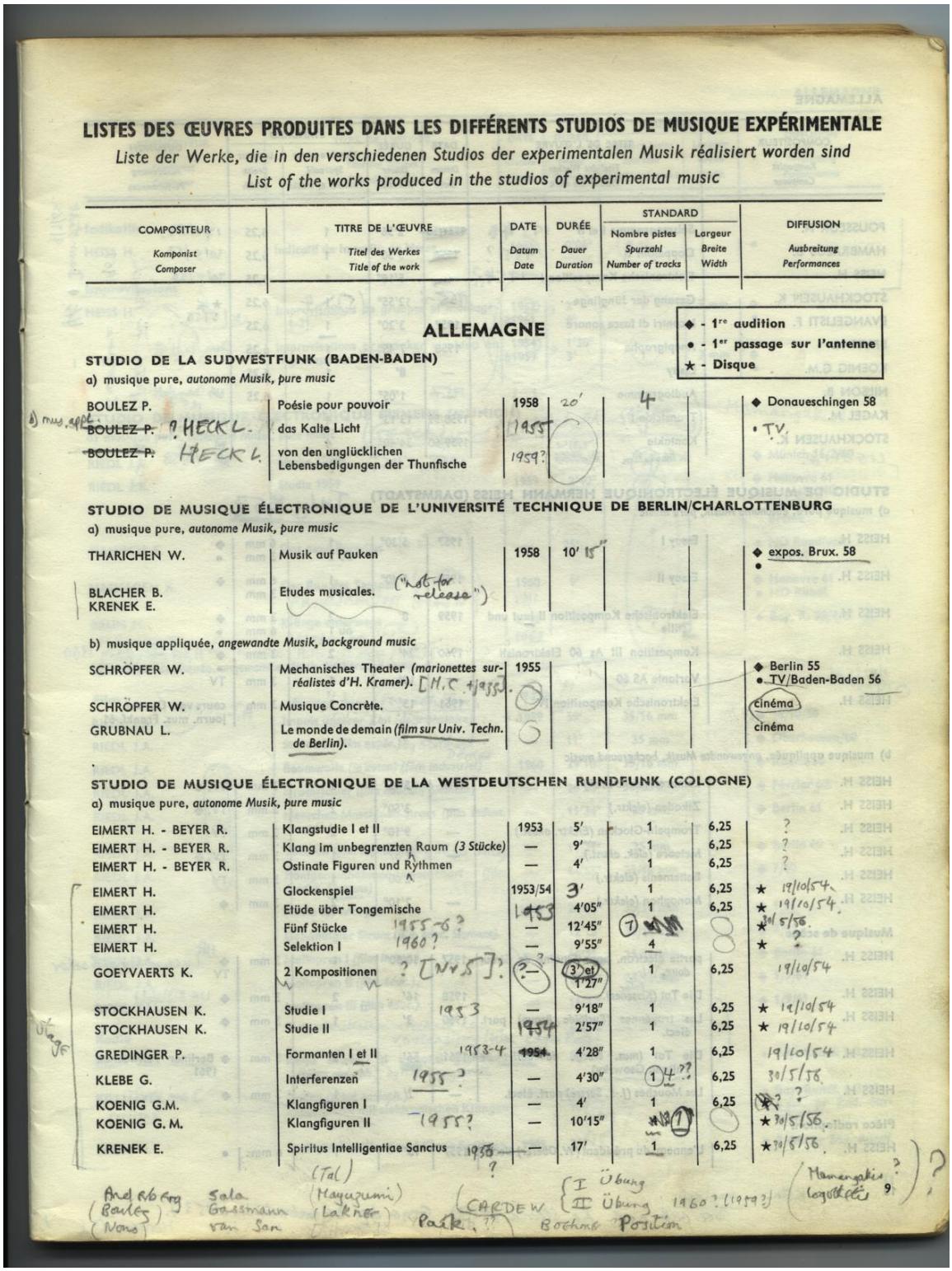


Figure 55. Cover of the first edition of RIME, HDA.



LISTES DES ŒUVRES PRODUITES DANS LES DIFFÉRENTS STUDIOS DE MUSIQUE EXPÉRIMENTALE

Liste der Werke, die in den verschiedenen Studios der experimentalen Musik réalisiert worden sind

List of the works produced in the studios of experimental music

◆ - 1re audition
● - 1er passage sur l'antenne
★ - Disque

COMPOSITEUR / Komponist / Composer	TITRE DE L'ŒUVRE / Titel des Werkes / Title of the work	DATE / Datum / Date	DURÉE / Dauer / Duration	STANDARD: Nombre pistes / Spurzahl / Number of tracks	STANDARD: Largeur / Breite / Width	DIFFUSION / Ausbreitung / Performances
ALLEMAGNE						
STUDIO DE LA SUDWESTFUNK (BADEN-BADEN)						
a) musique pure, *autonome Musik, pure music*						
BOULEZ P.	Poésie pour pouvoir	1958	20'	4		◆ Donaueschingen 58
~~BOULEZ P.~~ ? HECKL.	das Kalte Licht	1955				• TV.
~~BOULEZ P.~~ HECKL.	von den unglücklichen Lebensbedigungen der Thunfische	1959?				
STUDIO DE MUSIQUE ÉLECTRONIQUE DE L'UNIVERSITÉ TECHNIQUE DE BERLIN/CHARLOTTENBURG						
a) musique pure, *autonome Musik, pure music*						
THARICHEN W.	Musik auf Pauken	1958	10' 15"			◆ expos. Brux. 58 ●
BLACHER B. KRENEK E.	Etudes musicales. ("not for release")					
b) musique appliquée, *angewandte Musik, background music*						
SCHRÖPFER W.	Mechanisches Theater (*marionettes surréalistes d'H. Kramer*). [M.C. +1955]	1955				◆ Berlin 55 ● TV/Baden-Baden 56
SCHRÖPFER W.	Musique Concrète.					cinéma
GRUBNAU L.	Le monde de demain (*film sur Univ. Techn. de Berlin*).					cinéma
STUDIO DE MUSIQUE ÉLECTRONIQUE DE LA WESTDEUTSCHEN RUNDFUNK (COLOGNE)						
a) musique pure, *autonome Musik, pure music*						
EIMERT H. - BEYER R.	Klangstudie I et II	1953	5'	1	6,25	?
EIMERT H. - BEYER R.	Klang im unbegrenzten Raum (*3 Stücke*)	—	9'	1	6,25	?
EIMERT H. - BEYER R.	Ostinate Figuren und Rythmen	—	4'	1	6,25	?
EIMERT H.	Glockenspiel	1953/54	3'	1	6,25	★ 19/10/54
EIMERT H.	Etüde über Tongemische	1953	4'05"	1	6,25	★ 19/10/54
EIMERT H.	Fünf Stücke 1955-6?	—	12'45"	7		★ 30/5/56
EIMERT H.	Selektion I 1960?	—	9'55"	4		★ ?
GOEYVAERTS K.	2 Kompositionen ? [Nr 5]?	? —	3' et 1'27"	1	6,25	19/10/54
STOCKHAUSEN K.	Studie I 1953	—	9'18"	1	6,25	★ 19/10/54
STOCKHAUSEN K.	Studie II	1954	2'57"	1	6,25	★ 19/10/54
GREDINGER P.	Formanten I et II 1953-4	~~1954~~	4'28"	1	6,25	19/10/54
KLEBE G.	Interferenzen 1955?	—	4'30"	1 4??	6,25	30/5/56
KOENIG G.M.	Klangfiguren I	—	4'	1	6,25	★? ?
KOENIG G. M.	Klangfiguren II 1955?	—	10'15"	1		★ 30/5/56
KRENEK E.	Spiritus Intelligentiae Sanctus 1956?	—	17'	1	6,25	★ 30/5/56

Figure 56. Information structure in the first edition of RIME, HDA. Annotations by Hugh Davies.



Figure 57. Cover of the second edition of RIME, compiled by Hugh Davies, HDA.

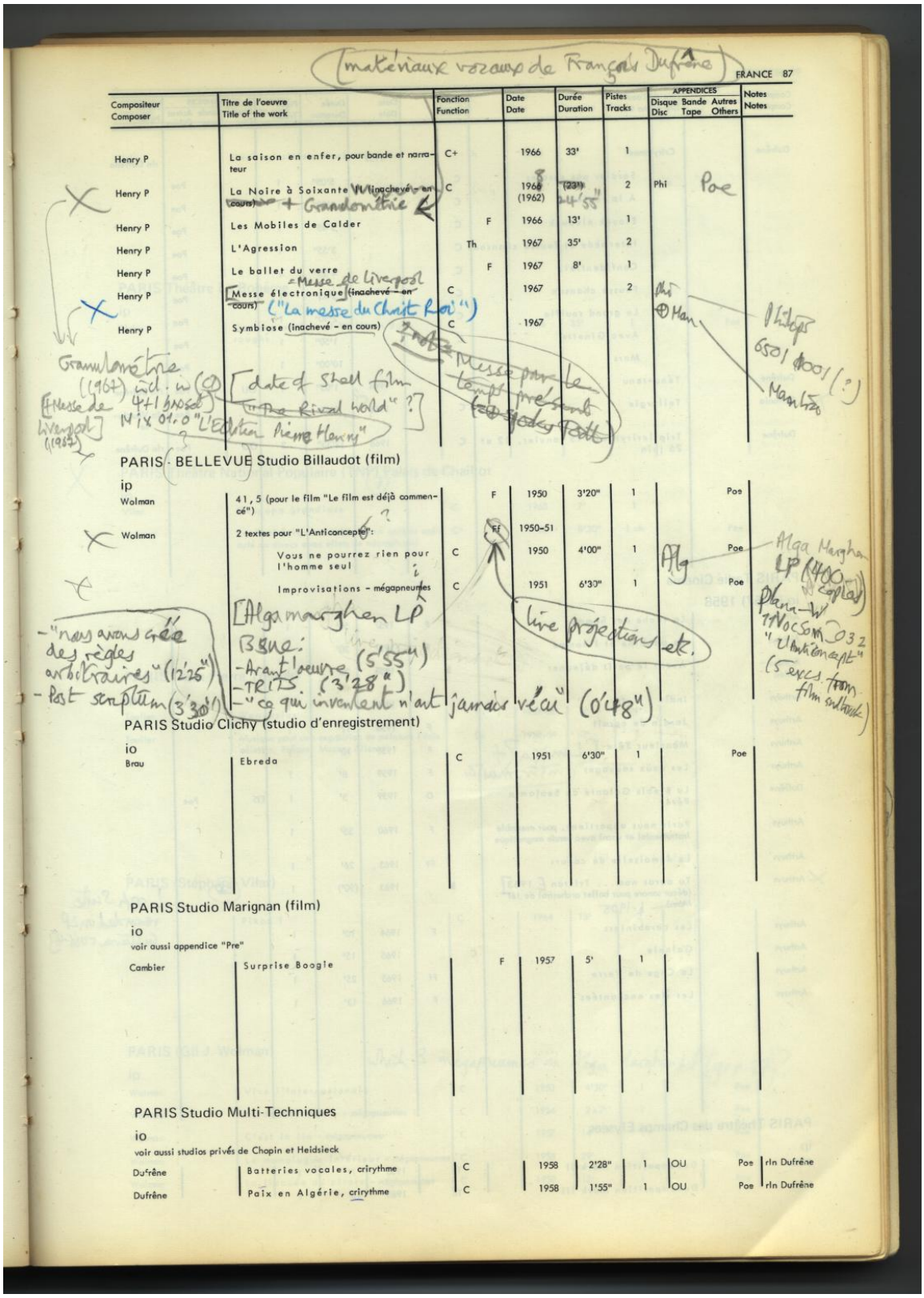


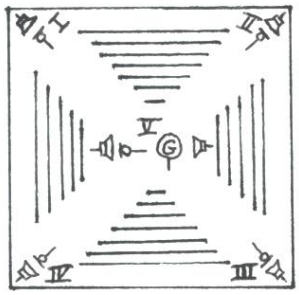
Figure 58. Information structure in the second edition of RIME, with Davies's later annotations, HDA.

All the sounds in this composition are produced by acoustic feedback, with the exception of the section 4'30"-6'30", when the generator is used to produce a spontaneous frequency modulation of the feedback. The subtitle "Alstrabal....." refers both to the initial impetus in composing the work and to the place of its first performance (Arts Laboratory, London) as well as to the basic musical feature of it, the use of feedback.

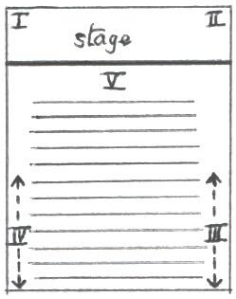
PLAYERS I-IV need not be trained musicians, and should be able to get good results after one rehearsal; their basic sound material is structured and modified by PLAYER V in addition to his own sound-producing activities.

The amplifiers should be sufficiently powerful to produce feedback at a low level of amplification which does not overload the loudspeakers. The feedback should never be painfully loud. The potentiometers may produce low-pitched feedback if they are turned up too high; this must be avoided until the section 10'00"-12'00", when if necessary it can be reinforced by boosting the bass filter controls on the amplifiers.

The layout of a performance is most effective when PLAYERS I-IV and their respective loudspeakers are in the four corners of the hall. PLAYER V sits in the very centre at a large table with all the rest of the equipment, and the audience is seated in a "boxing ring" arrangement around him.



If the hall has a fixed performance area and seating, PLAYERS I and II should be at the back of the stage, V at the front (preferably just off the stage, on the same level as the audience), and III and IV behind or beside the audience.



PLAYERS I-IV

This diagram contains the circuit applying to PLAYERS I-IV. The normal connections on the switching unit are 1 to 1, 2 to 2, etc. Each microphone input must be switchable to any combination of the 4 outputs (4x4 push button ON/OFF switches); unless special circuitry is incorporated, any input that is connected to more than one output will duplicate these connections for any other input which is connected to only one of these outputs (e.g. input 1 to outputs 2+3, input 2 to output 2 will also connect input 2 to output 3).

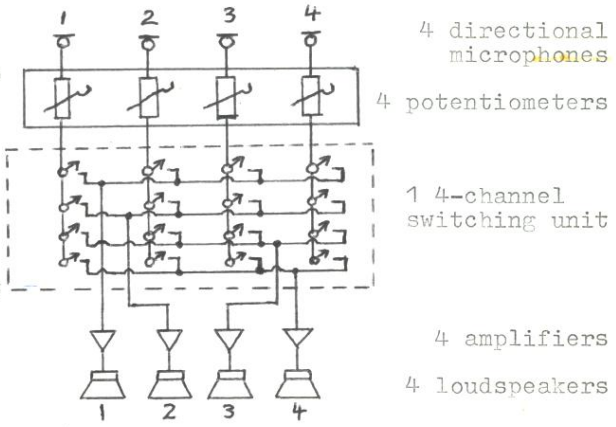
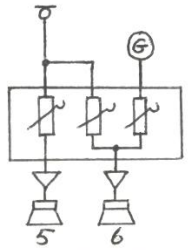


Figure 59. Section of the score for *Quintet*, HDA, p.1.

to obtain the maximum range of acoustic feedback (pitch, timbre) with a minimum of movement. It may be found advisable to wrap the microphone cable a couple of times around the wrist of the hand in which it is held, to avoid accidental noises.
Each player performs the score for PLAYERS I-IV independently of the others, although the changeovers between sections should not be staggered over more than about 10" on each side of the timing given. PLAYERS I-IV should have at least one stopwatch between them (and be able to see each other), which is started at the beginning of the performance at a cue from PLAYER V.
During TACET sections the microphones will be switched off by PLAYER V. Microphone movements should be mainly backwards and forwards along the direction in which the loudspeaker is facing. The feedback must be medium or high in pitch, according to specifications given in the score, except for the final section. Pitch ranges are indicated by H (high), M (medium) and L (low). Before 10'00", change pitch whenever a low sound occurs. If the microphones have a bass-cut switch on them, use this up to 10'00". Low-pitched feedback in the final section may be difficult to obtain in spite of this; suggestions include holding the microphone against the top of the loudspeaker cabinet or on the floor nearby (e.g. on the same floor-boards as those on which the loudspeaker is standing), and moving further away from the loudspeaker with "normal" microphone movements than was previously necessary.
When one section changes over gradually....into another there should be a steady progression from the indications of the first section to those of the next.
All sound patterns should be as varied as possible in pitch, rhythmic articulation, etc. within the scope of the indications for each section. Dynamic levels are controlled by PLAYER V. Only between 9'15" and 10'00" should the players react (without moving from their positions) to any switching operations carried out by PLAYER V, which alter the original microphone-loudspeaker connections. Except for this section, do not react to changes of dynamic level (including disappearance of feedback altogether); continue the actions indicated.

PLAYER V

This diagram contains the circuit applying to PLAYER V. In addition to the generator and his own dynamic levels, he controls the dynamic levels and the switching unit for PLAYERS I-IV.



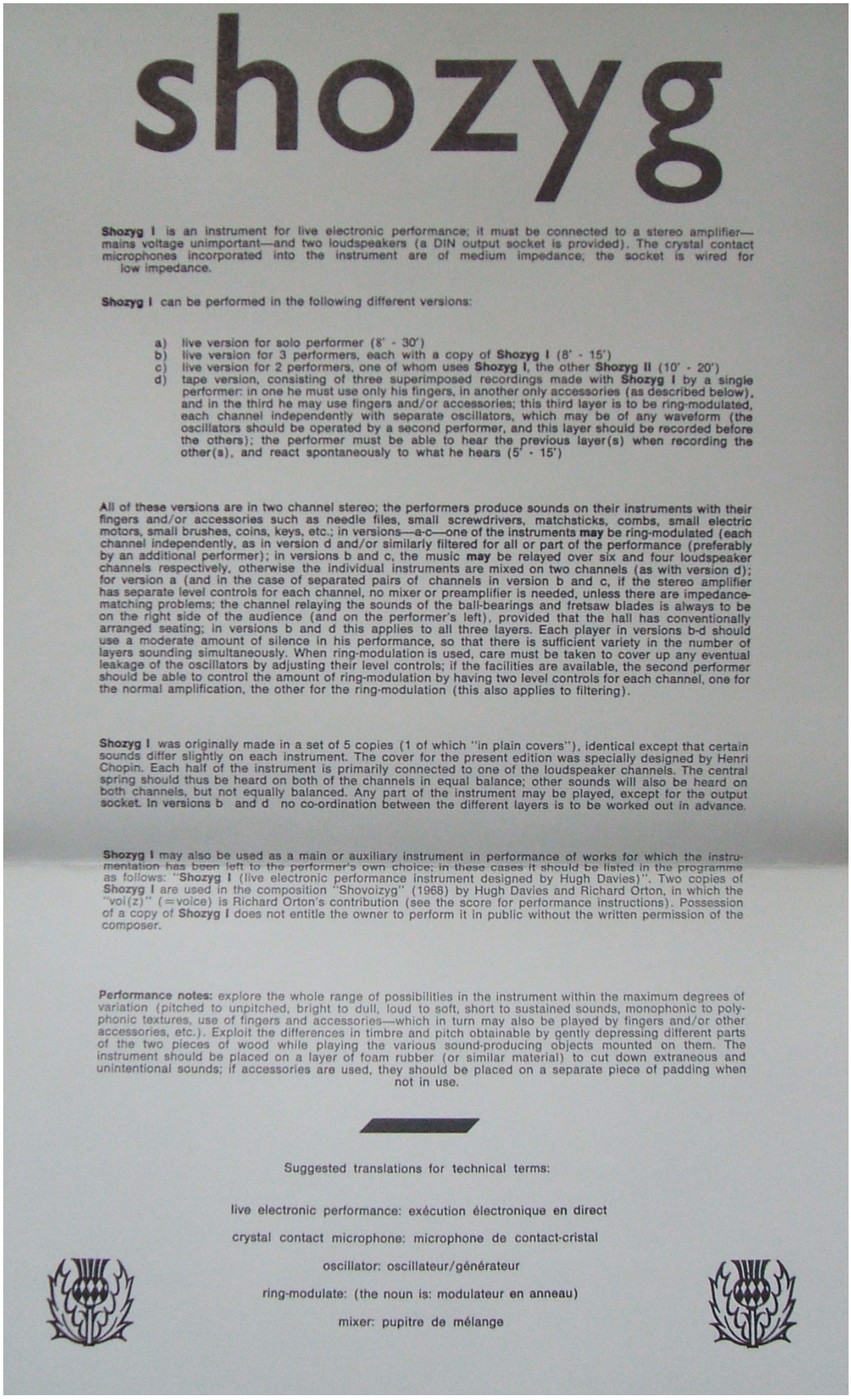
1 directional microphone
1 sine/square-wave generator
3 potentiometers (or 2, + 1 panpot)
2 amplifiers
2 loudspeakers

The microphone is on a small table stand, which can be held easily in the hand. It remains in a fixed position (facing one of the two loudspeakers to which it is connected) unless otherwise indicated (e.g. "in hand"). Pitch ranges are indicated by H (high), M (medium) and L (low). Loud-speakers 5 and 6 are to be equidistant from PLAYER V, one on each side of him (less powerful than the other four), only a few feet away.
When one section changes over gradually....into another there should be a steady progression from the indications of the first section to those of the next.

Figure 60. Section of the score for *Quintet*, HDA, p.2.



Figure 61. First copy of Shozyg I held at the Science Museum, London, (photograph: my own).



shozyg

Shozyg I is an instrument for live electronic performance; it must be connected to a stereo amplifier—mains voltage unimportant—and two loudspeakers (a DIN output socket is provided). The crystal contact microphones incorporated into the instrument are of medium impedance; the socket is wired for low impedance.

Shozyg I can be performed in the following different versions:

a) live version for solo performer (8' - 30')
b) live version for 3 performers, each with a copy of **Shozyg I** (8' - 15')
c) live version for 2 performers, one of whom uses **Shozyg I**, the other **Shozyg II** (10' - 20')
d) tape version, consisting of three superimposed recordings made with **Shozyg I** by a single performer: in one he must use only his fingers, in another only accessories (as described below), and in the third he may use fingers and/or accessories; this third layer is to be ring-modulated, each channel independently with separate oscillators, which may be of any waveform (the oscillators should be operated by a second performer, and this layer should be recorded before the others); the performer must be able to hear the previous layer(s) when recording the other(s), and react spontaneously to what he hears (5' - 15')

All of these versions are in two channel stereo; the performers produce sounds on their instruments with their fingers and/or accessories such as needle files, small screwdrivers, matchsticks, combs, small electric motors, small brushes, coins, keys, etc.; in versions—a-c—one of the instruments **may** be ring-modulated (each channel independently, as in version d and/or similarly filtered for all or part of the performance (preferably by an additional performer); in versions b and c, the music **may** be relayed over six and four loudspeaker channels respectively, otherwise the individual instruments are mixed on two channels (as with version d); for version a (and in the case of separated pairs of channels in version b and c, if the stereo amplifier has separate level controls for each channel, no mixer or preamplifier is needed, unless there are impedance-matching problems; the channel relaying the sounds of the ball-bearings and fretsaw blades is always to be on the right side of the audience (and on the performer's left), provided that the hall has conventionally arranged seating; in versions b and d this applies to all three layers. Each player in versions b-d should use a moderate amount of silence in his performance, so that there is sufficient variety in the number of layers sounding simultaneously. When ring-modulation is used, care must be taken to cover up any eventual leakage of the oscillators by adjusting their level controls; if the facilities are available, the second performer should be able to control the amount of ring-modulation by having two level controls for each channel, one for the normal amplification, the other for the ring-modulation (this also applies to filtering).

Shozyg I was originally made in a set of 5 copies (1 of which "in plain covers"), identical except that certain sounds differ slightly on each instrument. The cover for the present edition was specially designed by Henri Chopin. Each half of the instrument is primarily connected to one of the loudspeaker channels. The central spring should thus be heard on both of the channels in equal balance; other sounds will also be heard on both channels, but not equally balanced. Any part of the instrument may be played, except for the output socket. In versions b and d no co-ordination between the different layers is to be worked out in advance.

Shozyg I may also be used as a main or auxiliary instrument in performance of works for which the instrumentation has been left to the performer's own choice; in these cases it should be listed in the programme as follows: "**Shozyg I** (live electronic performance instrument designed by Hugh Davies)". Two copies of **Shozyg I** are used in the composition "Shovoizyg" (1968) by Hugh Davies and Richard Orton, in which the "voi(z)" (=voice) is Richard Orton's contribution (see the score for performance instructions). Possession of a copy of **Shozyg I** does not entitle the owner to perform it in public without the written permission of the composer.

Performance notes: explore the whole range of possibilities in the instrument within the maximum degrees of variation (pitched to unpitched, bright to dull, loud to soft, short to sustained sounds, monophonic to polyphonic textures, use of fingers and accessories—which in turn may also be played by fingers and/or other accessories, etc.). Exploit the differences in timbre and pitch obtainable by gently depressing different parts of the two pieces of wood while playing the various sound-producing objects mounted on them. The instrument should be placed on a layer of foam rubber (or similar material) to cut down extraneous and unintentional sounds; if accessories are used, they should be placed on a separate piece of padding when not in use.

Suggested translations for technical terms:

live electronic performance: exécution électronique en direct

crystal contact microphone: microphone de contact-cristal

oscillator: oscillateur/générateur

ring-modulate: (the noun is: modulateur en anneau)

mixer: pupitre de mélange

Figure 62. Shozyg instructions included in Henri Chopin's *OU* magazine edition.



Figure 63. Davies performing on Shozyg I, (photograph: Julian Nieman, 1968).



Figure 64. Davies performing on Shozyg I, (photograph: Martin Cohen, July 1968).

Appendix 2.

The *SHO-ZYG* exhibition.

The *SHO-ZYG* exhibition took place at St. James Hatcham, Goldsmiths College, in London between 21 and 27 September 2012. The exhibition's website is http://www.sho-zyg.com. The exhibition curators were James Bulley and Kathrine Sandys. Exhibition co-curators included Ryo Ikeshiro (audiovisual and film programme); Tom Mudd (unmanned disklavier programme); Tom Richards (Daphne Oram room); Emmanuel Lorien Spinelli (8-Channel room); and myself (Hugh Davies room).

James Bulley and Kathrine Sandys said:

'The *SHO-ZYG* exhibition takes its name from an improvisatory instrument, Shozyg I, invented by Hugh Davies, founder of Goldsmiths Electronic Music Studios. Davies took the name Shozyg from the final book of an encyclopaedia (from Shoal to Zygote), and it is this anthological notion that we wish to portray within this exhibition. With this approach in mind, we seek to explore the rich tapestry of sound practice at Goldsmiths, both past and present, tracing lines through from the late 1950s to the present day. Selected works from over 50 artists are included, encompassing a broad range of practice: from acoustic ecology to generative musics, and from vocal utterance to audiovisual composition. Experimental sound practice and sound art are comparatively new and thriving fields, operating within a historically visually dominated art world. It is our hope that through this showcase we can allow the audience a space to listen: a platform for auditory exploration and new aesthetic experience. Alongside these exhibitions, we were privileged to host From Recent Projects, a solo exhibition by sound and visual artist Lawrence Upton (Honorary Research Fellow at Goldsmiths). The exhibition explored Upton's current working process, displaying a number of indicative scores, as bases for performance, maquettes, as aids to thought experiments and a silent film arising from his collaboration with the Brazilian plastic artist Wilton Azevedo, as a basis for performance'


SHO–ZYG
Sound installations, exhibitions and performances
from artists at
Goldsmiths,
University of London
sho-zyg.com
including work by
Nabil Ahmed
Lara Ann
Les Back
John Baily
Ain Bailey
Rosie Bergonzi
Martijn van Boven
Clare Brady
Johanna Bramli
Nick Brown
James Bulley
Meital Covo
Peter Cusack
John Levack Drever
Mick Grierson
Max Hattler
Ruth Hawkins
Chris Haworth
Steph Horak
Ryo Ikeshiro
Robert Jack
Daniel Jones
Hywel Jones
Ryan Jordan
Simon Katan
Jeremy Keenan
Tina Krekels
Marcus Leadley
James Leahy
Ricardo Leizaola
John Lely
Matt Lewis
Nico Lewis
Jockel Liess
Francisco Lopez
John Macedo
Parag Mital
Mimosa Moize
Tom Mudd
Barley Norton
Tim O'Riley
Melanie Powell
Paul Prudence
Ian Rawes
Roger Redgate
Tom Richards
Kathrine Sandys
Dawn Scarfe
Tom Slater
Adam Smith
Emmanuel Spinelli
Ian Stonehouse
Benedict Taylor
Tom Tlalim
Lawrence Upton
Laurie Waller
Hans-Ulrich Werner
Jake Williams
Portia Winters
Matthew Yee-King
Alistair Zaldua
Bruno Zamborlin
Exhibitions exploring
the history of the
Goldsmiths
Electronic Music Studios
the work of
Hugh Davies
the life of
Daphne Oram
and the work of
Lawrence Upton
St. James's Hatcham Church
New Cross, London SE14 6AD
21 September – 27 September 2012



Figure 66. St. James Hatcham Church, (photograph: James Bulley).



Figure 67. Exhibition map. 1. Entrance; 2. Hugh Davies room; 3. Daphne Oram room; 4. Disklavier programme; 5. EMS history; 6. Technotronic by Tom Richards; 7. Listening posts; 8. Call & Response; 9. *New Build* by Jake Williams and Ben Lyford; 10. *Thorugh the Listening Glasses* by Dawn Scarfe; 11. Audiovisual programme; 12. Lawrence Upton; *Iridescent Self* by Robert Jack; 15. Soundscape programme; 16. Film programme; *Memorial Chimes Parts 1 & 2* by Kathrine Sandys; 18. *Radio Reconstructions* by Daniel Jones and James Bulley.



Figure 68. The Hugh Davies room, (photograph: my own).



Figure 69. The Hugh Davies room, (photograph: my own).

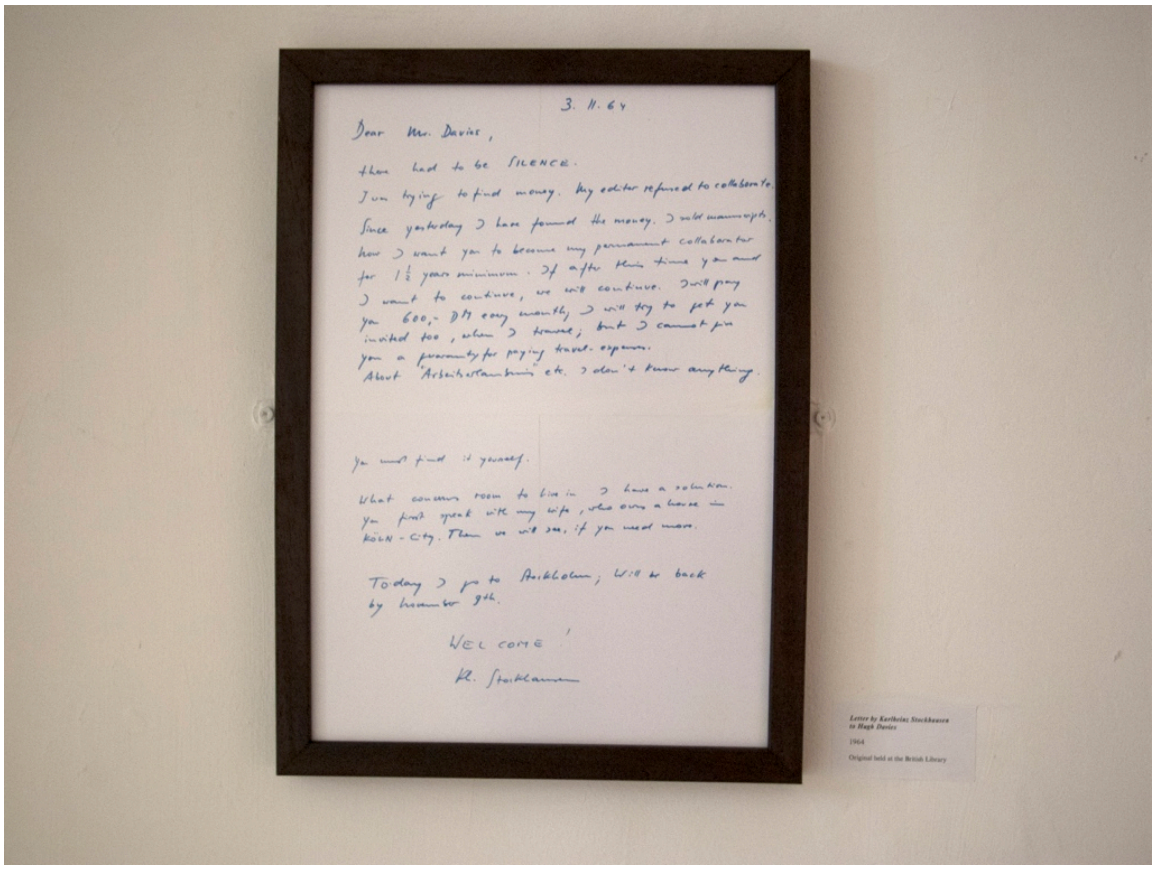


Figure 70. Letter from Stockhausen to Davies, (photograph: James Bulley).



Figure 71. *Mikrophonie I* performance poster, (photograph: James Bulley).



Page 10 ★★★★★★★ misthickmist . . . where's the road? . . . Hell . . . Cafe . . . tea . . . bacon . . . eggs . . . Hear the sound . . . who's still stoned ★★★★★★★★February 3—15, 1968

DAVIES BREAKS UNIVERSITY SOUND BARRIER

Picture: DAVID REDON

what is JOHN CAGE doing with BUCKMINSTER FULLER?

(See Below)

Strange and perhaps wonderful things are happening in Urbana, Illinois (where?) where John Cage and Buckminster Fuller among others are turning an academic situation into a hive of creativity and experiment. What are Cage and Fuller getting from one another there? One report is that Cage has now turned the I Ching into a computer programme and is casting more complex indeterminations than ever and that Fuller is into acid influenced architecture. The session there brought about, in the Weeks before Christmas, the largest and most elaborate technical mixed-media performance since the Theatre and Engineering Nine Evenings. Very Much Very Soon.

JACK H. MOORE

ELECTRONIC MUSIC LECTURES

Place: University of London Goldsmiths' College, Lewisham Way, New Cross, S.E.14.

Time: Every Tuesday at 7 p.m. There have been two introductory lectures (it started on January 23) given by Desmond Briscoe, director of BBC Radiophonic Workshop. There are nine more in the series, all being given by Hugh Davies, director of E.M.S.

Hugh Davies is a composer who specialises particularly in electronic music. He is the first English composer to work with live electronic music (and one of the first in Europe). For the last two and a half years he has been working in Europe and the U.S.A. In Germany he worked for a while with Stockhausen, and in the States at the Independent Electronic Music Center (where his International Electronic Music Catalog will soon be published). He also staged the recent Festival of New Music at the Arts Lab. A work of his involving tapes and live electronic performance is scheduled for the SPNM concert on March 22 at the London Planetarium.

"The electronic music courses at Goldsmiths' will include: Study of important electronic compositions, analysis of selected works (Stockhausen etc.) and the composition and notation of electronic music.

"I shall also specially feature live electronic music which consists of the performance of electronic equipment directly in the concert hall, bypassing the use of tape altogether. I shall talk on basic acoustical and electrical aspects and discuss simple electrical circuitry to enable interested composers to start building equipment, and generally go in on all aspects of the subject which have been neglected in England so far.

"This is the first full-scale course that has been given in England; previously there have been short courses given by composers, but these were fairly conventional and not particularly experimental. England is about the only country where electronic music has been used primarily as background music, and the composers are quite different from those working with experimental techniques in instrumental music.

"In addition to the series of lectures there will be practical sessions for selected students, which will be extensions of subjects discussed in the lectures."

SPACE, SOUNDS & THEIR MAKER

THE THREE CONCERTS in the Arts Lab's Festival of New Music on January 13 and 14 included typical samples of nearly all the main composers of the last fifteen years' European music.

The best performances provided standards of aural interest and emancipation which could and should be used to measure any other music which pretends to be up-to-date—try it on pop for a start. Ostensibly orthodox piano pieces by Morton Feldman (cool) and David Bedford (lush) used space, and a lack of either connection or contrast between events, to make one notice the unique sound-quality of each note or chord—how it died away as well as how it began; they also teased the listener by substituting the dying vibrations of notes which were never played for the ones the listener expected.

Sensual Appeals

Christian Wolff's "For One, Two or Three People" gloried in the sensuous appeal of sound (and silence) even more boldly, stripping sound of its uniform (orthodox timbre and definite pitch) first, while Cornelius Cardew's "Memories of You" extended this fascination with physical essence to the movement in space of sounds and their maker. The other really enjoyable piece was Robert Ashley's devastating "Wolfman", introducing the universe of sound available from even the commonest electronic equipment—human bellowing amplified with distortion and feedback, and a tape-recorded sports broadcast.

Fresh Material

Quite apart from its fresh materials and the way these resist traditional listening-patterns, this music is new because of its open-endedness. The ingredients of a piece vary from concert to concert, depending on the choice of the performer, and the music allows or even forces the listener to make his own choice of a focal point. Therefore such pieces could fail without the composer or performers being to blame. LaMonte Young's "Composition 1960 No. 10" is chiefly for the eyes, but the performers had not thought out its possibilities in this direction. The mixture of legitimate notes and bizarre effects in John Cage's "Concert for Piano and Orchestra with Solo for Voice 1" never went any deeper than that, while the dangerously high pitch and intensity of the feedback in Cage's "Electronic Music for Piano with Variations IV" made the listener's share of the work impossible. Only Earle Brown's academic "Folio" and "Four Systems" were unlikely to have been redeemed by different circumstances.

Other Achievements

The Festival was an event for regular listeners, too, in presenting performers and pieces new to any one. Hugh Davies (who produced and directed it) and the dozen performers (among whom pianist Richard Toop was outstanding) amount to a whole second generation of British musicians who can be trusted with experimental music. But our young composers are still trying to repeat other people's achievements: the isolated smackings, exclamations and plastic rustlings of Anne Lockwood's "Drums" were incidental to embarrassed ritual miming, while in "Three Lines" Robin Thompson burnt his fingers trying to grab one of LaMonte Young's tapes (on Stockhausen disc on another), and suffered from scratching violin in a drone piece into the bargain. Still, Richard Orton's "Circle for 2 or 4 Players" held my attention with prepared-piano and screwed violin similar to the Wolff piece, and I might have enjoyed all three and the Cage too if the Arts Lab had given me the seat I'd paid for and allowed me to attend to the music.

VICTOR SCHONFIELD

"TAKE A TRIP"
The MUSICLAND, 230 Portobello Road, W.11
for The Stravinsky Album Check and
Solo-a-Nik L.P. plus
New Imports from U.S.A.
Also discotheques for hire.

INDICA BOOKS
102 Southampton Row
London, W.C.1
Free catalogue of Eastern philosophy now available
Visit us for modern Poetry, Literature and Posters.

Figure 72. Newspaper article. (photograph: my own).



Figure 73. Shozyg I (photograph: my own).



Figure 74. Shozyg I, instructions and photographs, (photograph: Jockel Liess).



Figure 75. Shozyg I, (photograph: my own).



Figure 76. Eargong instrument and poster, (photograph: Havva Basto).



Figure 77. Springboards, (photograph: my own).



Figure 78. Springboards, (photograph: my own).

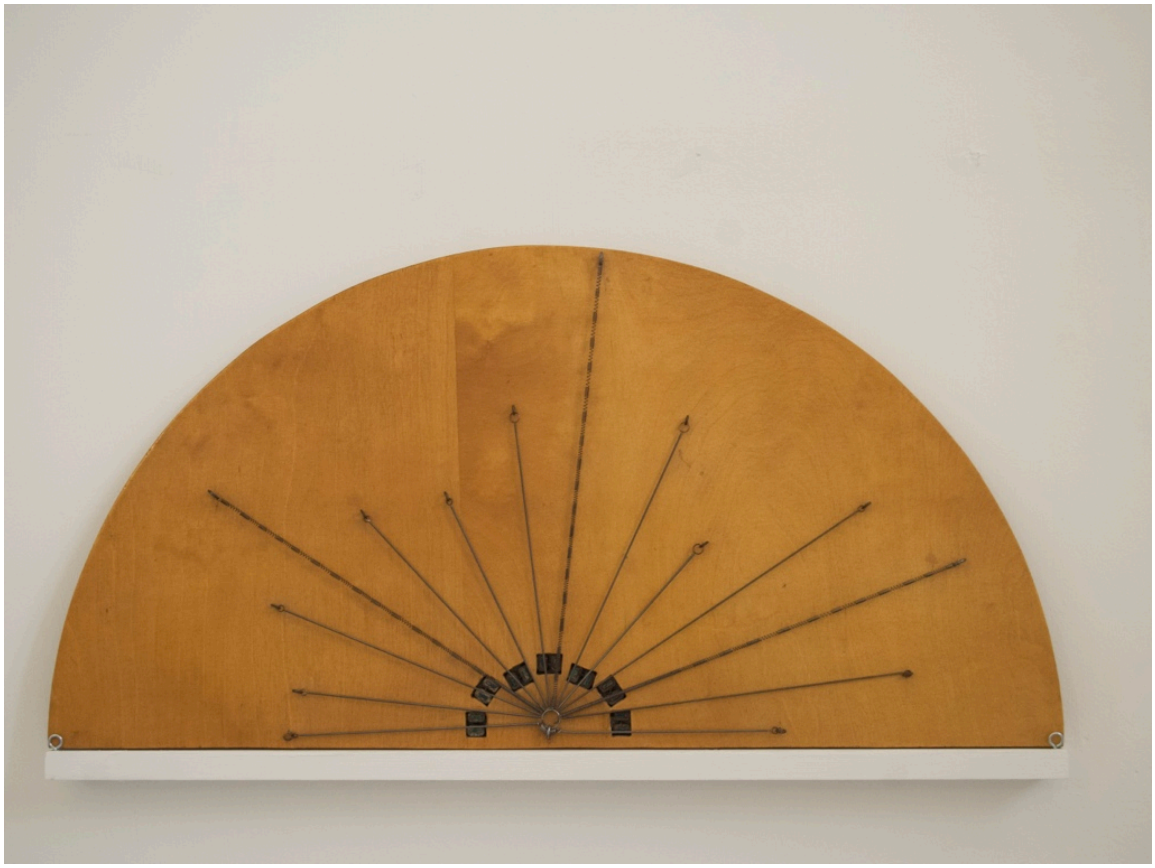


Figure 79. Springboard Mk. III, (photograph: James Bulley).

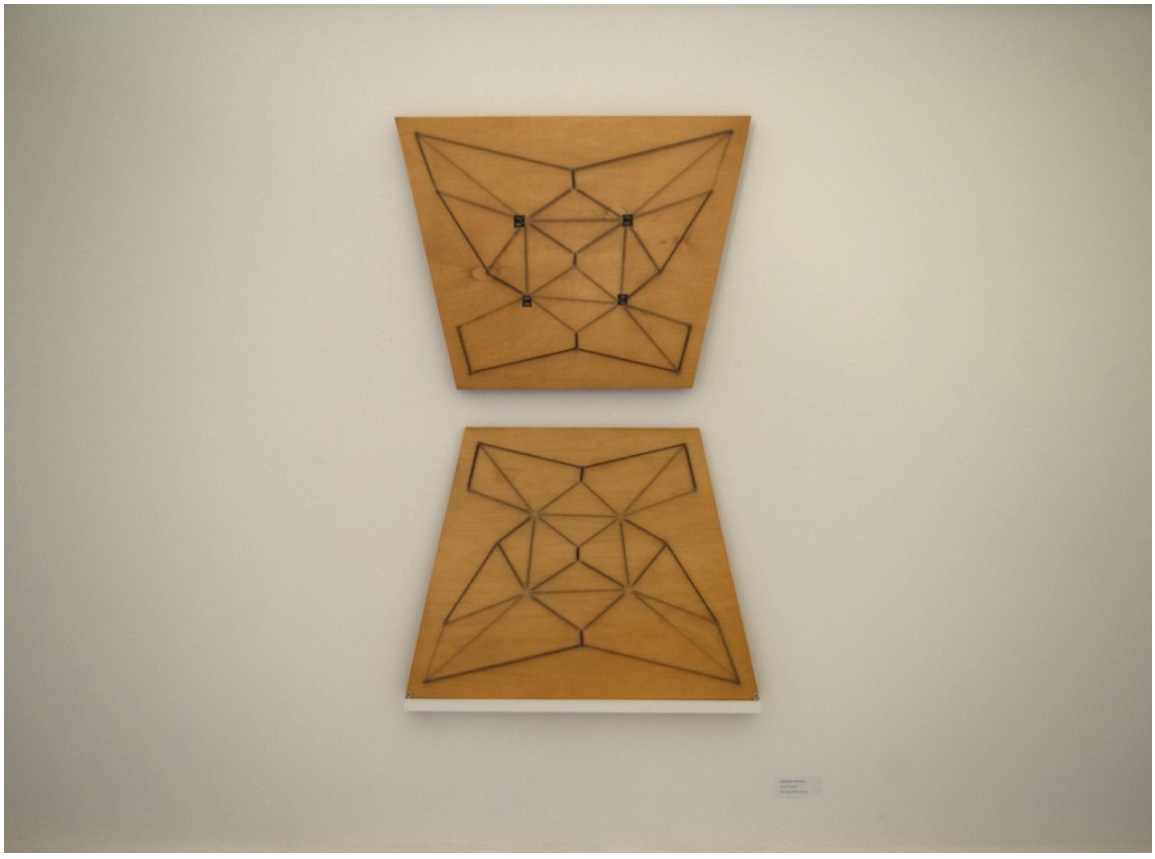


Figure 80. Springboard Mk. X and prototype, (photograph: Havva Basto).



Figure 81. Hugh Davies with invented instruments, (photograph: my own).



Figure 82. Davies playing My Spring Collection. Still the film *Visiting Hugh Davies*.

Appendix 3.

A selected list of works by Hugh Davies.

Chamber Music.

5 Bagatelles for Piano, (1959).

2 Pieces for Flute and Piano, (1961).

3*3, (1961-62), flute.

Trigon, (1961-61), flute.

3 Piano Pieces, (1962).

Variations for Piano, (1962).

Metamorphosis, (1962), flute, oboes, clarinet in Bb, horn in F, trombone, piano, viola, cello, double bass (4 players).

Brass Septet, (1962-63-75).

Episode I, (1962), flute, clarinet.

Episode II, (1962), clarinet.

Contact, (1963), piano.

Rhapsody for Solo Violin, (1963).

Dreamstream, (1964-73-80), 4 trumpets, 2 horns, trombone; or 2 trumpets, horn, 3 trombones, tuba.

Moonlight, (1964-72), variable ensemble (alto saxophone, trumpet, trombone, electric guitar, accordion, cymbal or other instruments with a similar range).

Processional, (1964-84), organ.

Kangaroo, (1968), organ.

Raisonnements, (1973), prepared piano.

Wind Trio (Differentials), (1973-75), 3 high wind instruments with a specific range.

Meldoci Gestures (1978), flute, violin, cello, piano.

Elegy, (1979-80), three serpents or other bass instruments.

Meldoci Gestures of the British Isles, (1979), flute, tuba or bass instrument.

Three Handelian Angels, (1980-81), clarinet, violin, cello.

Master Domenico's Humpback – Interrupted Tango, (1985), piano.

Fanfare (for Stanley Glasser), (1991), 5 trumpets.

Inventio, (1994), improvising soloist and ensemble (flute, oboe, clarinet in Bb or bassoon, viola, 2 cellos, accordion, synthesizer or electronic piano).

Trois amerces en forme de poireau (Three Beginnings in the Form of a Leek), (1995), piano.

Electronic music.

Essay for Magnetic Tape, (1962).

Taken for a Ride!, (1967).

Music for Didgeridoo and Water Heating System, (1968).

Quintet (Astrabal…), (1968), live electronics.

Galactic Interfaces, (1968), tape, live electronics.

Shozyg I, (1968), tape version.

Caromantee, (1971).

Mobile with Differences, (1973-81), soloist oboe, clarinet, viola, cello, accordion, live electronics

Natural Images (1976/92), amplified objects, tape.

Vision, (1985-87).

Celeritas, (1987).

Strata, (1987), tape, Concert Aeolian Harp.

Pentapych, (1990), solo performer, tape.

From Trees and Rocks, (2000).

Electronic incidental music.

The Good Woman of Setzuan, (1962-64), voice, orchestral ensemble.

Suite from the Scarecrow, (1963), tape.

Twelfth Night, (1963), orchestral ensemble.

Hang Your Head and Die, (1964), tape.

Metropolis, (1975), tape.

Natural Images, (1976), live electronics.

Natural Images (1976), tape version.

Tapestries, (1982-83), tape.

Environmental projects.

Music for Car Horns, (1967-68).

Singing Road, (1969-78).

Tuned Waterfall, (1973).

Acoustic Park, (1975-78).

Unusual Sounds on the Campus, (1976-77).

Environmental Recording Projects, (1977-80).

Sounds Heard, (1969-2004).

Music theatre.

Commentary, (1969-70), 2 live electronic instruments, props.

Music for Strings, (1971).

The Birth of Live Electronic Music, (1971-88), 2 voices, Stroh violin, sound balancer.

Beautiful Seaweeds, (1972-73), 2 musicians, 2 dancers, 2 slide projectors.

The Musical Educator, (1974), speaker, piano, harmonium, 2 dancers, 2 slide projectors.

The Pianoforte (1974), speaker, piano.

The Search for the Music of the Spheres, (1978), 4 actors, sound balancer, slide projector.

Shop Window, (1979).

I Have a Dream, (1987), dancer or mime, tape, slide projector.

Works for invented instruments.

Shozyg I, (1968), 1 player.

Shozyg I, (1968), 2 players.

Shozyg II, (1968), 1 player.

Shozyg I & II, (1968), 2 players.

Springsong, (1970-79), 1 player on Springboards.

Shozyg Sequence No.1, (1971-80), 1 player.

HD Breadbins (Culinary Quintet), (1972), 4 or 5 players on HD Breadbins.

Gentle Springs (1973), 4 or 5 players on Springboards.

Eargong, (1973).

Music for Bowed Diaphragms, (1973-79), 1 player.

My Spring Collection, (1975-81), 1 player.

Jigmaree, (1977), any youth orchestra with self built instruments.

Music for a Single Spring, (1977), My Spring Collection.

Music for Two Springs (Deux resorts fort ambitiueux…), (1977), My Spring Collection.

Music for Three Springs, (1977), My Spring Collection.

Salad, (1977), 1 player on Eggslicer, Cheese Slicer, Tomato Slicer.

Shozyg Sequence No.2, (1977-80), 1 player.

At Home, (1978), 1 player on invented instruments.

Shozyg Sequence No.3, (1990-92), 1 player on Multishozyg.

Eine Kleine Eierschneidermusik (Eggslicer Quintet), (2000-1), 5 players on Eggslicer.

Porcupine, (2000), 1 player.

Lunar Day, (2000), My Spring Collection.

Solar Night, (2000), My Spring Collection, Eggslicer, Tomato Slicer, Metal Diaphragm List.

3-D Postcard, (2002).

Chinese Fan, (2002).

Composition with Cadence, (2002), musical box.

Conference Instrument, (2002).

Envelope Buzzer, (2002), 1 player.

Interlude, (2002), musical box.

Lady Bracknell, (2002), 1 player.

Larchcone Clinkers, (2002), 1 player.

Lid Clickers, (2002), 3 players.

Nut Whistles, (2002), cob nuts and acorns.

Squeakbox, (2002).

Installations.

Ring Dem Bells, (1991, exhibited Liverpool, England, 2000 and Málaga, Spain, 2000).

Tintinnabularia Coloniensis, (Cologne, Germany, 2001).

Soft Winds Do Blow, (Cobh, Ireland, 2002).

Postojnski zvoncert (Postojnian Bell Concert), (Postojna, Slovenia, 2003).

Vocal Music.

Male est (Catullus), (1959), tenor, piano.

Three Carols on Latin Texts, (1963), female choir.

Vom ertrunkenen Mädchen, (1964), soprano, flute, clarinet, piano.

Choirography, (1974), 16 mixed voices.

Haiku, (1974), soprano, piano.

Etro so repost, (1979), soprano, tenor, melody instrument.

Ex una voce, (1979), tenor, synthesizer.

Man in Moone, (1979), soprano, tenor.

Four Songs, (1979-81), voice, melody instruments.

Rapport, (1981), soprano, flute, piano.

Threedywell, (1981), soprano, tenor, melody instrument.

Vocalise, (1981), soprano, tenor.

Bifrons, (1988), for Bifrons ensemble (mezzo soprano, piano or synthesizer, bass, sax, percussion).

Bibliography.

Alperson Philip. 'On Musical Improvisation,' *Journal of Aesthetics and Art Criticism*, 43, 1, (1984), pp. 17-29.

Adorno, Theodor W. *Aesthetic Theory*, (London and New York, Continuum, 2004).

Adorno, Theodor W. *The Culture Industry: Selected Essays on Mass Culture*, Ed. J. M. Bernstein, (New York, Routledge, 2001).

Adorno, Theodor W. 'Art and the arts'. *Can One Live After Auschwitz? A Philosophical Reader*, Ed. R. Tiedemann, (Stanford, California, Stanford University Press, 2003), pp. 368- 387.

Adlington, Robert. *Sound Commitments: Avant-garde Music and the Sixties*, (Oxford, Oxford University Press, 2009).

Agassi, Joseph. *Science and Society, Studies in the Sociology of Science*. (London, D. Reidel Publishing Company, 1981).

Anderson, Owen. 'Letter'. *Music Journal*, 9, (1968), p. 93.

Anonymous. 'The Richard Mutt case'. *The Blind Man*, 2, (1917), pp. 5-6.

Appleton, Jon. 'Letter'. *Notes*, 24, 3, (1968), pp. 485-486.

Arendt, Hannah. *The Human Condition*, (Chicago, University of Chicago Press, 1998).

Artist Placement Group Archive, Tate Archive, London.

Ashline, William L. 'The Pariahs of Sound: On the Post-Duchampian Aesthetics of Electro-Acoustic Improv,' *Contemporary Music Review*, 22, 4, (2003), pp. 23-33.

Asplund Richard. 'Frederic Rzewski and Spontaneous Political Music,' *Perspectives in New Music* 33, 1/2, (1995), pp. 418-441.

Attali, Jacques. *Noise: The Political Economy of Music*. (Minneapolis, Minnesota and London: University of Minnesota Press, 1985).

Atton Christopher F. 'Improvised Music: Some Answers to Some Questions,' *Contact*, 33, (1988), pp. 13-17.

Babbitt, Milton. 'Who cares if you listen?', *Contemporary Composers on Contemporary Music*, Ed. E. Schwarzt and B. Childs, (New York, Da Capo Press, 1998), pp. 244-250.

Bacon, Francis. *The New Atlantis,* (Saint Louis Park, Filiquarian Publishing, 2007).

Backstrom, Melvin James. 'The Field of Cultural Production and the Limits of Free Improvisation,' *Critical Studies in Improvisation*, (2013), 9, 1, pp. 1-12

Bailey, Derek. *Improvisation* (London, British Library National Sound Archive, 1992)

Bailey, Kathryn. 'Webern, Anton', *Grove Music Online. Oxford Music Online*, http://www.oxfordmusiconline.com/subscriber/article/grove/music/29993, (accessed 21 November 2012).

Ballantine, Christopher. 'Towards an aesthetic of experimental music', *The Musical Quarterly,* 63, 2, (1977), pp. 224–46.

Battier, Marc. 'Phonography and the invention of sound', *Recorded Music: Philosophical and Critical Reflections,* Ed. M. Doğantan-Dack, (London, Middlesex University Press, 2008), pp.100-115.

Bell, Clive. 'History of the LMC', *Variant Magazine*, 8, (1999), http://www.variant.org.uk/8texts/Clive_Bell.html, (accessed 19 September 2013).

Bell, Nicolas. 'Sounds Heard. The music of Hugh Davies', *Media and Intermedia –Essays in Honor of Claus Clüver*, Ed. S. A. Glaser, (Amsterdam, Rodopi, 2009), pp. 231-244.

Benitez, Joaquim M. 'Avant-Garde or experimental? Classifying contemporary music', *International Review of the Aesthetics and Sociology of Music*, 9, 1, (1978), pp. 53–77.

Benjamin, Walter. 'The work of art in the age of mechanical reproduction', *Mass Communication and Society*, (London, Edward Arnold in association with the Open University, 1977), pp. 384-408.

Benjamin, Walter. *Understanding Brecht*, (London, Verso, 1998).

Benjamin, Walter. *Illuminations*, Ed. H. Arendt, (London, Pimlico, 1999).

Berg Olsen, et al. *A Companion to the Philosophy of Technology*, (Malden, MA, Wiley-Blackwell, 2009).

Bergson, Henri. *Creative Evolution,* Trans. A. Mitchell, (London, Kessinger Publishing, 2005).

Bergstrøm-Nielsen, Carl. 'FIXING/ CIRCUMSCRIBING/ SUGGESTING/ EVOKING. An analysis of Stockhausen's text pieces', (2006), http://www.stockhausensociety.org/intuitive-music.htm, (accessed 19 May 2012).

Bertoncelli, Riccardo. Gatti, Roberto. 'Intervista di Roberto Gatti e Riccardo Bertoncelli a Hugh Davies', *Trasgressioni sonore,* (festival programme book, Lugano, 1979), pp.12-14.

Bloch, Susi. 'Marcel Duchamp's green box', *Art Journal*, 34, 1, (1974), pp. 25-29.

Bolt Rasmussen, Mikkel. 'The Politics of Interventionist Art: The Situationist International, Artist Placement Group, and Art Workers' Coalition,' *Rethinking Marxism: A Journal of Economics, Culture & Society*, 21, 1, (2009), pp. 34-49

Bock, Jannika. *Concord in Massachusetts, Discord in the World, The Writings of Henry Thoreau and John Cage*, (Peter Lang, Frankfurt, 2008).

Borio, Gianmario. *Mario Bertoncini: Porträt eines radikalen Neueres*, (Montags Musik, Berlin, 1994).

Bortolotto, Mario. 'Colloquio con Mario Bertoncini', *Spettatore musicale*, 3, (1970), pp. 20–23.

Boulez, Pierre. *Orientations: Collected Writings*, Ed. J.J. Nattiez, (Cambridge, Massachusetts, Harvard University, 1990).

Boulez, Pierre. *Stocktakings from an Apprenticeship*, Ed. P. Thévenin, (Oxford, Clarendon, 1991).

Brecht, Bertolt. *Brecht on Theatre: The Development of an Aesthetic*, Ed. J. Willett, (New York, Hill and Wang, 1994).

Brennan, Andrew. Lo, Yeuk-Sze. 'Environmental ethics', *The Stanford Encyclopedia of Philosophy*, Ed. E. N. Zalta, 2002 (2008) http://plato.stanford.edu/archives/fall2011/entries/ethics-environmental, (accessed 06 April 2012).

Breton, André. *Manifestoes of Surrealism*, (Ann Arbor, University of Michigan Press, 1972).

Briscoe, Desmond. Curtis-Bramwell, Roy. *The BBC Radiophonic Workshop, The First 25 Years*, (London, British Broadcasting Corporation, 1983).

Brisley, Stuart. 'No, it is not on,' *Studio International*, 942, (1972), pp. 95-6.

Brown, Lee B. 'Improvisation,' *The Routledge Companion of Music and Philosophy*, Edited by Theodore Gracyk and Andrew Kania, (London and New York, Routledge, 2011), pp. 59-69.

Bürger, Peter. *Theory of the Avant-Garde*, (Manchester, Manchester University Press, 1984).

Călinescu, Matei. *Five Faces of Modernity, Modernism, Avant-Garde, Decadence, Kitsch, Postmodernism*, 2nd edition, (Durham, North Carolina, Duke University Press, 1987).

Cabanne, Pierre. *Dialogues with Marcel Duchamp*, (London, Thames and Hudson, 1971).

Cameron, Catherine M. *Dialectics in the Arts: the Rise of Experimentalism in American Music*, (Westport, Connecticut, Praeger, 1996).

Camfield, William, A. (1990) 'Marcel Duchamp's Fountain: Its history and aesthetics in the context of 1917', *Marcel Duchamp: Artist of the Century,* Ed. R. Kuenzli, F. Naumann, (Cambridge, Massachusetts, MIT Press, 1990).

Cage, John. *A Year From Monday*, (Middletown, Connecticut, Wesleyan University Press, 1967).

Cage, John. 'Introduction to Themes and Variations,' *Audio Culture: Readings in Modern Music*, Edited by Christoph Cox and Daneil Warner, (New York, London, Bloomsbury, 2013), pp. 221-225.

Cage, John. *Silence: Lectures and Writings*, (New York, Marion Boyars, 2009).

Caporaletti, Vincenzo. *I processi improvvisativi della musica*, (Lucca, Libreria Musicale Italiana, 2005).

Cardew, Cornelius. *February Pieces*, (London, Ed. Peters, 1961).

Cardew, Cornelius. 'A Scratch Orchestra: Draft constitution', *The Musical Times*, 110, 1516, (1969), pp. 617-619.

Cardew, Cornelius. *Stockhausen Serves Imperialism, and Other Articles*, (London, Latimer New Dimensions, 1974).

Cardew, Cornelius. 'Report on Stockhausen's *Carré*', *The Musical Times*, 102, 1424, (1961), pp. 619-622.

Cardew, Cardew. 'Music in London', *The Musical Times*, 107, 1475, p.43-47.

Cardew. Cornelius. *Treatise*, (London, Ed. Peters, 1971).

Cardew, Cornelius. 'Towards an ethic of improvisation', *Cornelius Cardew: A Reader*, (Essex, Copula, 2006), 125-134.

Carson, Rachel. *Silent Spring*, (London, Hamish Hamilton, 1963).

Carlson, Allen. 'Environmental aesthetics', *The Stanford Encyclopedia of Philosophy*, Ed. E. N. Zalta, 2007 (2010) http://plato.stanford.edu/archives/win2010/entries/environmental-aesthetics, (accessed 06 April 2012).

Cary, Tristram. (1969) 'Was ist elektronische Musik', *Musical Times*, 5, (1969), p.493.

Childs, Barney et al. (1982-1983) 'Forum: Improvisation', *Perspectives of New Music*, 21, 1/2, (1982-83), pp. 26-111.

Chion, Michel. *Guide to Sound Objects, Pierre Schaeffer and Musical Research*, Trans. J. Dack, C. North, (2009), http://www.ears.dmu.ac.uk/IMG/pdf/Chion-guide/GuidePreface.pdf, (accessed 13 May 2013).

Chopin, Henri. *OU Sound Poetry An Anthology,* (Italy: Chopin and Alga Marghen, 2002).

Chopin, Henri. *Revue OU*, 34/35, 1969.

Christopher, Mark. 'Smalley, Roger', *Grove Music Online*, http://www.oxfordmusiconline.com/subscriber/article/grove/music/25979, (accessed 10 February 2012).

Coleman, Ornette. 'Change of the Century,' *Audio Culture: Readings in Modern Music*, Edited by Christoph Cox and Daneil Warner, (New York, London, Bloomsbury, 2013), pp. 253-254.

Collins, Nicolas et al. 'Not necessarily "English music": Britain's second golden age', *Leonardo Music Journal*, 11, (2001).

Costa, Rogério. 'Free Musical Improvisation and the Philosophy of Gilles Deleuze,' *Perspectives of New Music*, 49, 1/2, (2011), pp. 127-142.

Cott, Jonathan. Stockhausen, Karlheinz. *Stockhausen: Conversation with the Composer*, (London, Pan Books, 1973).

Cowell, Henry. 'Towards neo primitivism', *Modern Music* 10, 3, (1993), pp. 149-153.

Cox, Christopher. 'The Jerrybuilt Future: The Sonic Arts Union, ONCE Group, and MEV's Live Electronics' *Undercurrents: The Hidden Wiring of Modern Music*, Edited by Rob Young, (London, Continuum, 2002), pp. 35-44.

Croce, Benedetto. *The Philosophy of Giambattista Vico*, (London, Transaction Publishers, 2002).

Cros, Caroline. *Marcel Duchamp*, (London, Reaktion Books, 2006).

Demers, Joanna. *Listening Through the Noise: The Aesthetics of Experimental Electronic Music*, (Oxford, Oxford University Press, 2010).

Dack, John. 'Pierre Schaeffer and the importance of Radiophonic Art', *Contemporary Music Review*, 10, 2 (1994), pp. 3-11.

Dack, John. 'Technology and the instrument', *Musik netz Werke - Konturen der neuen Musikkultur*, Ed. L. Grün, F. Wiegand, (Bielefeld: Verlag, 2002), pp. 39-54.

Davies, Hugh. *Electronic Music*, BA dissertation, Oxford University, (1964).

Davies, Hugh. *The Music of Karlheinz Stockhausen*, unpublished book, first draft, (The Hugh Davies Archive, The British Library, c.1965).

Davies, Hugh. *Karlheinz Stockhausen*, unpublished book, second draft, (The Hugh Davies Archive, The British Library, c.1966).

Davies, Hugh. *Répertoire international des musiques électroacoustiques/ International Electronic Music Catalog*, (New York, MIT Press and Paris, Groupe de recherches musicales de l'O.R.T.F, 1968a).

Davies, Hugh. 'Working with Stockhausen', *The Composer*, 27, (1968b), pp. 8–11.

Davies, Hugh. 'Shozyg', *Revue OU*, Ed. H. Chopin, 34/35 (Essex, Chopin, 1969).

Davies, Hugh. 'Artist: Hugh Davies Placement: Department of Health (London),' *Studio International* 980, (1976), pp. 168-169.

Davies, Hugh. 'Electronic music studios in Britain' *Contact*, 15, (1976-77), pp.29-31.

Davies, Hugh. 'Making and performing simple electroacoustic instruments', *Electronic Music for Schools*, Ed. R. Orton, (Cambridge, Cambridge University Press, 1981).

Davies, Hugh. 'The 20th century sound world: New instruments and sound sculpture', *A Noise in Your Eye*, (Bristol, Arnolfini, 1985).

Davies, Hugh et al. *Eye Music: the Graphic Art of New Musical Notation*, (London, Arts Council, 1986a).

Davies, Hugh. 'Musical notation - old and new', *Eye Music - the Graphic Art of New Musical Notation*, (London, Arts Council, 1986b).

Davies, Hugh. 'A survey of new instruments and sound sculpture', *Echo: the Images of Sound*, Ed. P. Panhuysen, (Eindhoven, Apollohuis, 1987).

Davies, Hugh. 'My invented instruments and improvisation', *Rubberneck*, 22, (1996), pp.36-38.

Davies, Hugh. 'Electronic instruments: classifications and mechanisms', "*I Sing the Body Electric": Music and Technology in the 20th Century*, Ed. H.J. Braun, (Hofheim, Wolke, 2000).

Davies, Hugh. 'Gentle Fire: An early approach to live electronic music', *Leonardo Music Journal*, 11, (2001), pp. 53-60.

Davies, Hugh. *Sounds Heard*, (Chelmsford, Soundworld, 2002).

Davies, Hugh. 'Drawn sound', *Grove Music Online*, http://www.oxfordmusiconline.com/subscriber/article/grove/music/47632, (accesse d 16 May 2012).

Davies, Hugh. 'Electronic instruments', *Grove Music Online*, http://www.oxfordmusiconline.com/subscriber/article/grove/music/08694, (accessed 27 April 27).

Davies, Stephen. *Musical Works and Performances: A Philosophical Exploration*, (Oxford, Clarendon Press, 2001).

Dean, Roger T. and Smith, Hazel. *Improvisation, Hypermedia and the Arts since 1945*, (Amsterdam, Harwood Academic Publishers, 1997).

DeLio, Thomas. *The Music of Morton Feldman*, (New York, Excelsior Music Publishing Company, 1996).

Derrida, Jacques. *Archive Fever: A Freudian Impression*, Translated by Eric Prenowitz, (Chicago and London: The University of Chicago Press, 1996)

Desmond, Kathleen K. *Ideas About Art*, (Chichester, Wiley-Blackwell, 2011).

Dipert, Randall R. *Artifacts, Art Works, and Agency*, (Philadelphia, Temple University Press, 1993).

Dickie, George. 'The new Institutional Theory of Art', *Aesthetics: Proceedings of the Eighth International Wittgenstein Symposium (Part I),* Ed. R. Haller, (Vienna, Hölder-Pichler-Tempsky, 1984), pp. 57-64.

Doak, Robin S. *Galileo: Astronomer and Physicist*, (Minneapolis, Minnesota, Capstone, 2006).

Drott, Eric 'The politics of Presque Rien', *Sound Commitments: Avant-garde Music and the Sixties*, Ed. R. Adlington, (Oxford, Oxford University Press, 2009), pp. 145-169.

Duchamp, Marcel. (1966) 'Apropos of "readymades"', *Art and Artists*, 1, (1966), p. 4.

Duchamp, Marcel. *The Writings of Marcel Duchamp*, Ed. P. Elmer, M. Sanouillet, (New York, Da Capo Press, 1989).

Durbin, Paul T., Ed. *Philosophy of Technology: Practical, Historical, and Other Dimensions*, (Dordrecht, Kluwer Academic Publishers, 1989).

Dusek, Val, Ed. *An Introduction to the Philosophy of Technology*, (Oxford, Blackwell Publishing, 2006).

Dupuy, Pierre. 'Technology and metaphysics', *A Companion to the Philosophy of Technology*, Ed. J. K. Berg Olsen et al., (Malden, Massachusetts, Wiley-Blackwell, 2007), pp. 214-217.

Eco, Umberto. 'The Poetics of the Open Work,' *Audio Culture: Readings in Modern Music*, edited by Christoph Cox and Daneil Warner, (New York and London, Bloomsbury, 2013), pp. 167-175.

Eimert, Herbert. 'Elektronische Musik', *Die Musik in Geschichte und Gegenwart*, 3, (Kassel, Bärenreiter, 1954), pp. 1263-1267.

Eimert, Herbert. 'What is electronic music?', *Die Reihe*, 1, (1958), pp.1-10.

Emmerson, Simon. *The Language of Electroacoustic Music*, (London, MacMillian, 1986).

Emmerson, Simon. 'Live electronic music in Britain: Three case studies', *Contemporary Music Review*, 6, 1, (1991), pp. 179-185.

Fabbri, Franco. 'What Kind of Music?,' *Popular Music*, 2, (1982), pp. 131-43.

Featherstone, Mike. 'Archive,' *Theory Culture Society*, 23, (2006), pp. 591-596.

Feisst, Sabine M. 'John Cage and Improvisation: An Unresolved Relationship,' *Musical Improvisation: Art, Education, and Society*, Edited by Gabriel Solis and Bruno Nettl, (Urbana, University of Illinois Press, 2009), pp. 38-51.

Feldman, Morton. *Give My Regards to Eighth Street: Collected Writings of Morton Feldman*, Ed. H. F. Bernard, (Boston, Massachusetts, Exact Change, 2000).

Foster, Hal. *The Return of the Real: the Avant-garde at the End of the Century*, (Cambridge, Massachusetts, MIT Press, 1996).

Foucault, Michel. *The Archaeology of Knowledge and the Discourse on Language*, Translated by A. M. Sheridan Smith, (New York, Pantheon Books, (1972).

Gale, Matthew. '*Objet trouvé*', *Grove Art Online*, http://www.oxfordartonline.com/subscriber/article/grove/art/T063150, (accessed 28 April 2012).

Gale, Matthew. 'Ready-made', *Grove Art Online*. http://www.oxfordartonline.com/subscriber/article/grove/art/T070990, (accessed 28 April 2012).

Gilbert, Jeremy. 'Becoming-Music: The Rhizomatic Moment of Improvisation,' *Deleuze and Music*, Edited by Ian Buchanan and Marcel Swiboda, (Edinburgh, Edinburgh University Press, 2004).

Goehr, Lydia. *Elective Affinities: Musical Essays on the History of Aesthetic Theory*, (New York, Columbia University Press, 2008).

Goldie, Peter. Schellekens, Elisabeth. *Philosophy and Conceptual Art*, (Oxford, Oxford University Press, 2007).

Gossart, Séverine. 'Marcel Duchamp / Ready-mades', *Dada*, (Paris, Editions du Centre Pompidou, 2005), pp. 378-382.

Gould, Carol S. and Kenneth Keaton. 'The Essential Role of Improvisation in Musical Performance,' *Journal of Aesthetics and Art Criticism*, 58, 2, (2000), pp. 143-8.

Gould, Glenn. 'The Prospects of Recording,' *Audio Culture: Readings in Modern Music*, Edited by Christoph Cox and Daneil Warner, (New York, London: Bloomsbury, 2013), pp. 115-126.

Gower, Barry. *Scientific Method. A Historical and Philosophical Introduction*, (London, Routledge, 1996).

Grant, Morag J. *Serial Music, Serial Aesthetics. Compositional Theory in Post-War Europe*, (Cambridge, Cambridge University Press, 2001).

Griffiths, Paul. *A Guide to Electronic Music*, (London, Thames & Hudson, 1980).

Griffiths, Paul. *Modern Music and After*, (Oxford, Oxford University Press, 1995)

Griffiths, Paul. 'Souster, Tim', *Grove Music Online*, http://www.oxfordmusiconline.com/subscriber/article/grove/music/26308, (accessed 10 February 2012).

Guglielmi, Angelo. *Avanguardia e sperimentalismo*, (Milano, Feltrinelli, 1964).

Hamilton, Andy. 'The Music of Chance: Musical Dice Men from John Cage to John Zorn,' ' *Undercurrents: The Hidden Wiring of Modern Music*, Edited by Rob Young, (London, Continuum, 2002), pp. 209-222.

Hamilton, Andy. *Aesthetics and Music*, (London, Continuum, 2007).

Hamilton, Nick. *Get a Haircut and Disappear: The History and Legacy of the London Musicians Collective*, (radio broadcast), (Resonance FM, 2 July 2008).

Heathcote, Abigail. 'Sound structures, transformations, and broken magic an interview with Helmut Lachenmann', *Contemporary Music: Theoretical and Philosophical Perspectives*, Ed. I. Deliège, M. Paddison, (Aldershot, Ashgate, 2010), pp. 331-348.

Helmholtz, Hermann. *On the Sensation of Tone*, (New York, Dover Publications, 1954).

Hiller, Lejaren A. Isaacson, Leonard M. *Experimental Music: Composition with an Electronic Computer*, (London, McGraw-Hill, 1959).

Holmes, Thomas B. *Electronic and Experimental Music: Pioneers in Technology and Composition* (New York, Routledge, 2002).

Hilpinen, Risto. 'Artifact', *The Stanford Encyclopaedia of Philosophy*, Ed. E. N. Zalta, http://plato.stanford.edu/entries/artifact (Accessed 30 May 2012).

Huebler, Douglas. 'Untitled statement', *Theories and Documents of Contemporary Art : A Sourcebook of Artists' Writings*, Ed. K. Stiles, H. P. Selz, (Berkeley, University of California Press, 1996), p. 840.

Hutton, Jo. *Radiophonic Ladies*, MA, Middlesex University, 2000.

Hutton, Jo. 'Daphne Oram: Innovator, writer and composer', *Organised Sound*, 8, 1, (2004), pp.49-56.

Ihde, Don. 'A phenomenology of technics', *Philosophy of Technology, the Technological Condition*, Ed. R. C. Scharff, V. Dusek, (Oxford, Blackwell Publishing, 2003).

Herschel, John F. W. *A Preliminary Discourse on the Study of Natural Philosophy*, (Chicago, University of Chicago Press, 1987).

Iges, José. 'Realidades artísticas resonantes', *Resonancias*, (exhibition catalogue, Málaga City Council, 2000), pp. 11-25.

Jones, Stuart. 'Making it Up As You Go Along,' *Leonardo Music Journal*, 11, 1, (2001), pp. 61-64.

Judovitz, Dalia. *Unpacking Duchamp: Art in Transit*, (Berkeley, University of California Press, 1995).

Kahn, Douglas. 'Track organology', *October*, 55, (1990), pp. 67-78.

Kahn, Douglas. 'The latest: Fluxus and music', *The Spirit of Fluxus*, Ed. E. Armstrong, J. Rothfuss, (Minneapolis, Walker Art Center, 1993).

Kahn, Douglas. 'An unheard-of organology', *Leonardo Music Journal*, Vol. 5, (1995), pp. 1-3.

Kahn, Douglas. 'Art and sound', *Hearing History: A Reader*, Ed. M. E. Smith, (Athens, Georgia, The University of Georgia Press, 2004), pp. 36-50.

Kane, Brian. 'L' objet sonore maintenant: Pierre Schaeffer, sound Objects and the phenomenological reduction, *Organised Sound*, 12, 1, (2007), pp. 15-24.

Kant, Immanuel. (2000) *Critique of the Power of Judgment*, Ed. P. Guyer, (Cambridge, Cambridge University Press, 2000).

Kostelanetz, Richard. Cage, John. *Conversing with Cage*, (London, Routledge, 2003).

Krauss, Rosalind E.*The Originality of the Avant-garde and Other Modernist Myths*, (Boston, Massachusetts, MIT Press, 1986).

Krefeld, Volker. 'The Hand in the Web: An Interview with Michel Waisvisz', *Computer Music Journal*, 14, 2, (1990), pp.28-33.

Kreihsl, Michael. Kasperak, Peter. Ed. *Fluxus Subjective*, (Vienna , Galerie Krinzinger, 1990).

Kropfinger, Klaus. *Wagner and Beethoven: Richard Wagner's Reception of Beethoven*, (Cambridge, Cambridge University Press, 1991).

Kutschke, Beate. 'Improvisation: An Always Accessible Instrument of Innovation,' *Perspectives of New Music*, 37, 2, pp. 147-162.

Landy, Leigh. *What's the Matter with Today's Experimental Music? Organized Sound Too Rarely Heard*, (Reading, Hardwood Academic Publishers, 1991).

Laycock, Jolyon, Ed. *A Noise in Your Eye!*, (Bristol, Arnolfini, 1985).

Lash, Dominic. 'Derek Bailey's Practice/Practise,' *Perspectives of New Music*, 49, 1, (2011), pp. 143-171

Lawlor, Leonard. 'Memory Becomes Electra,' *The Review of Politics* 60, 4, (1998), pp. 796-8.

Leopold, Aldo. 'The land ethic', *A Sand County Almanac and Sketches Here and There* (Oxford: Oxford University Press, 1987), pp. 201-226.

Lewis, George E. 'Improvised Music After 1950: Afrological and Eurological Perspectives,' *Audio Culture: Readings in Modern Music*, Edited by Christoph Cox and Daneil Warner, (New York, London: Bloomsbury, 2013), pp. 272-284.

Loubet, Emmanuelle. Roads, Curtis. Robindoré, Brigitte. 'The beginnings of electronic music in Japan, with a focus on the NHK Studio: The 1950s and 1960s', *Computer Music Journal*, 21, 4 (1997), pp. 11-22.

Maconie, Robin. *Stockhausen*, (Oxford, Oxford University Press, 1976).

Maconie, Robin. *Other Planets: The Music of Karlheinz Stockhausen*, (Oxford: Scarecrow Press, 2005).

MacArthur, Sally. *Feminist Aesthetics in Music*, (London, Greenwood Press, 2002).

Mackay, Andy. *Electronic Music*, (Oxford, Phaidon, 1981).

Mallet, Franck. 'Il suono lontano. Conversazione con Gacinto Scelsi', *Giacinto Scelsi. Viaggio al centro del suono,* Ed. P.A. Castanete, N. Cisternino, (La Spezia, Luna Edizioni, 2001), pp. 18-28.

Manning, Peter. *Electronic and Computer Music*, revised edition, (Oxford, Oxford University Press, 2004).

Manoff, Marlene. 'Theories of the Archives from Across the Disciplines,' *Portal: Libraries and the Academy*, (Baltimore, Johns Hopkins University Press, 2004), pp. 9-25.

Marinetti, Filippo T. 'The founding and manifesto of Futurism', *Futurism: An Anthology*, Ed. L. S. Rainey, C. Poggi, L. Wittman, (New Haven, Yale University Press, 2009), pp. 49-53.

Marshall, Steve 'The story of the BBC Radiophonic Workshop', *Sound on Sound*, (2008), http://www.soundonsound.com/sos/apr08/articles/radiophonic.htm, (accessed 2 May 2011).

Marshall, Steve. 'Graham Wrench: The story of Daphne Oram's optical synthesizer', *Sound On Sound*, (2009), http://www.soundonsound.com/sos/feb09/articles/oramics.htm, (accessed 2 May 2011).

Mauceri, Frank X. 'From experimental music to musical experiment', *Perspectives of New Music,* 35, 1, (1997), pp. 187-204.

Metzger, Heinz-Klaus. 'Abortive concepts in the theory and criticism of music', *Die Reihe*, 5, (1959), pp. 21–29.

Metzger, Gustav. 'A Critical Look at Artist Placement Group,' *Studio International* 940, (1972), pp. 4-5.

Meyer-Eppler, Werner. *Elektronische Klangerzeugung: Elektronische Musik und synthetische Sprache*, (Bonn, Ferdinand Dümmlers, 1949).

Mooney, James. 'Hugh Davies's Electronic Music Documentation 1961–8,' *Organised Sound: An International Journal of Music and Technology*, 20, 2, (forthcoming).

Mumma, Gordon. 'An electronic music studio for the independent composer', *Journal of Audio Engineering Society*, 12, 3, (1964), pp. 240-244.

Nadeau, Maurice. *The History of Surrealism*, (Harmondsworth, Penguin, 1974).

Nattiez, Jean-Jacques et al. *The Boulez-Cage Correspondence*, (Cambridge, Cambridge University Press, 1995).

Naumann, Francis M. 'Duchamp, Marcel', *Grove Art Online*, http://www.oxfordartonline.com/subscriber/article/grove/art/T023894, (accessed 28 April 2012).

Nettl, Bruno. 'Thoughts on Improvisation: A Comparative Approach,' *Musical Quarterly*, 60, 1, (1974), pp. 1-19.

Newall, Diana. Pooke, Grant. *Art History: The Basics*, (London, Routledge, 2008).

Nicholls, David. *American Experimental Music, 1890-1940*, (Cambridge, Cambridge University Press, 1991).

Nicholls, David. 'Avant-Garde and experimental music', *American Music*, Ed. D. Nicholls, (Cambridge, Cambridge University Press, 1998), pp. 517-534.

Nicholls, David. Ed. *The Cambridge Companion to John Cage*, (Cambridge, Cambridge University Press, 2002).

Nietzche, Friedrich. 'The parable of the madman', *The Gay Science*, Ed. W. Kaufmann, New York, Vintage, 1974) pp.181-82.

Nietzsche, Friedrich. *The Birth of Tragedy*, (Oxford, Oxford University Press, 2000).

Nono, Luigi. 'Lo sviluppo della tecnica seriale', *Scritti e colloqui*, Ed. A. I. De Benedectis, V. Rizzardi, Milano, Ricordi, 2001), pp. 19-42.

Norton, Louise. (1917), 'Buddha of the bathroom', *The Blind Man*, 2, (1917), p. 6.

Nyman, Michael. *Experimental Music: Cage and Beyond*, 2nd edition, (Cambridge and New York, Cambridge University Press, 1999).

O'Callaghan, Casey. *Sounds*, (Oxford, Oxford University Press, 2010).

Oram, Daphne. 'The composer', *Journal of the Composers' Guild of Great Britain*, 9, (1962), pp. 5-8.

Oram, Daphne. *An Individual Note*, (London, Galliard, 1972).

Oram, Daphne. 'Looking back…to see ahead' *Computer Music Review*, 11, (1994), pp. 225-8.

Ortega y Gasset, José. *The Revolt of the Masses*, (New York, W. W. Norton, 1950).

Oskamp, Jacqueline. 'Waisvisz, Michel', *Grove Music Online*, http://www.oxfordmusiconline.com/subscriber/article/grove/music/48322, (accessed 21 May 2012).

Palombini, Carlos. 'Pierre Schaeffer, 1953: Towards and experimental music', *Music & Letters*, 74, 4 (1993), pp. 542-557.

Parakilas, James. 'Classical music as popular music', *The Journal of Musicology*, 3, 1, (1984), pp. 1-18.

Partch, Harry. *Genesis of a Music: an Account of a Creative Work, its Roots and its Fulfillments*, (New York, Da Capo Press, 1979).

Petrobelli, Pierluigi. 'Bertoncini, Mario', *Grove Music Online*, http://www.oxfordmusiconline.com/subscriber/article/grove/music/02932, (accessed 21 May 2012).

Piekut, Benjamin. *Experimentalism Otherwise: The New York Avant-Garde and its Limits*, (Berkeley, University of California Press, 2011).

Pisaro Gleasman, Kathryne. *Music from Scratch: Cornelius Cardew, Experimental Music and the Scratch Orchestra in Britain in the 1960s and 1970s*, PhD, Northwestern University, 2001.

Popper, Karl. *The Logic of Scientific Discovery*, (London, Routledge, 2002).

Prévost, Edwin. "The Aesthetic Priority of Improvisation: A Lecture," *Contact*, 25, (1982), pp. 32-37.

Prévost, Edwin. *No Sound is Innocent*, (Harlow, Copula, 1995).

Prévost, Edwin. 'The Arrival of a New Musical Aesthetic: Extracts from a Half-Buried Diary,' *Leonardo Music Journal* 11, 1, (2001), pp. 25-28.

Prévost, Edwin. *AMM*: *The First Concert*, (Harlow, Copula, 2011).

Kaplan, David M. Ed. *Readings in the Philosophy of Technology*, (Oxford, Rowman and Littlefield Publishers, 2004).

Ramshaw, Sara. 'Deconstructin(g) Jazz Improvisation: Derrida and the Law of the Singular Event,' *Critical Studies in Improvisation* 2, 1, (2006), pp. 1-19.

Rapaport Herman. 'Archive Trauma,' *Diacritics*, 28, 4, (1998), pp. 68-81.

Rapp, Friedrich. 'Introduction: General perspectives in the complexity of philosophy of technology', *Philosophy of Technology: Practical, Historical, and Other Dimensions*, Ed. P. T. Durbin (Dordrecht, Kluwer Academic Publishers, 1989), pp. xi-2.

Rees, Ronald. 'The scenery cult, changing landscape tastes over three centuries', *Landscape Research*, 19, (1975), pp. 39–47.

Roberts, David. 'Hugh Davies: Instrument maker', *Contact*, 17, (1977), pp. 8-13.

Roberts, David. 'The A-Z of Hugh Davies', *Crafts*, 37, (1979), pp. 30-35.

Ronte, Dieter. 'Nam June Paik's early works in Vienna', *Nam June Paik*, Ed. J. G. Hanardt, (New York, Whitney Museum of American Art, 1982), pp.74-78.

Routh, Francis. *Contemporary British Music: the Twenty-Five Years from 1945to 1970*, (London, Macdonald, 1972).

Routley, Richard. 'Is there a need for a new, an environmental ethic?', *Proceedings of the 15th World congress of Philosophy*, 1, Sophia, Bulgaria, (Sophia, Bulgaria, Sophia Press, 1973), pp. 205-10.

Rufer, Josef. *The Works of Arnold Schoenberg: A Catalogue of His Compositions, Writings and Paintings*, (New York, Free Press of Glencoe, 1963).

Rzewski, Frederic. 'Little Bangs: A Nihilist Theory of improvisation,' *Audio Culture: Readings in Modern Music*, Edited by Christoph Cox and Daneil Warner, (New York and London, Bloomsbury, 2013), pp. 266-271.

Samson, Jim. *Music in Transition: A Study of Tonal Expansion and Atonality, 1900-1920*, (New York, W.W. Norton & Company, 1977).

Sansom, Matthew. 'Imaging Music: Abstract Expressionism and Free Improvisation,' *Leonardo Music Journal* 11, 1, (2001), pp. 29-34.

Saunders, James. Ed. *The Ashgate Research Companion to Experimental Music*, (Aldershot, Ashgate, 2009).

Sandford, Mariellen R. *Happenings and Other Acts*, (London, Routledge, 1995).

Sarewitz, Daniel. 'Technology and power', *A Companion to the Philosophy of Technology*, Ed. J. K. Berg Olsen et al., (Malden, Massachusetts, Wiley-Blackwell, 2009), pp.308-310.

Schaeffer, Pierre. *Traité des objets musicaux : essai interdisciplines*, (Paris, Editions du Seuil, 1966).

Schaeffer, Pierre. *In Search of a Concrete Music*, Trans. J. Dack, C. North, (Berkeley, University of California Press, 2013).

Schaeffer, Pierre. Diliberto, John. 'Pierre Schaeffer and Pierre Henry: Pioneers in sampling', *Electronic Musician*, 12, (1986), pp. 34-37.

Schafer, Murray R. *Ear Cleaning: Notes for an Experimental Music Course*, (Don Mills, Ontario, BMI Canada, 1967).

Schafer Murray R. *The Tuning of the World*, (New York: Knopf, 1977).

Scharff, Robert C. et al., *Philosophy of Technology, the Technological Condition*, (Oxford, Blackwell Publishing, 2003)

Schmidtz, David. Willott, Elizabeth. *Environmental Ethics: What Really Matters, What Really Works*, (Oxford, Oxford University Press, 2002).

Schoenberg, Arnold. 'Brahms the progressive', *Style and Idea. Selected Writings of Arnold Schoenberg*, Ed. L. Stein, London, Faber and Faber, 1975), pp. 398-441.

Schoenberg, Arnold. *Theory of Harmony*, (Berkeley, University of California Press, 1978).

Scruton, Roger. *The Aesthetics of Music*. (Oxford, Oxford University Press, 1999).

Seer Sound Archive, http://www.mimaroglumusicsales.com/labels/seer+sound+archive.html, (accessed 3 February 2012).

Sell, Mike. *Avant-Garde Performance and the Limits of Criticism. Approaching the Living Theatre, Happenings/Fluxus, and the Black Arts Movement*, (Ann Arbor, University of Michigan Press, 2008).

Selz, Peter. H. and Stiles Kristine. *Theories and Documents of Contemporary Art: a Sourcebook of Artists' Writings*, 2nd edition, (Berkeley, University of California Press, 1996).

Smith, Roberta. 'Conceptual art', *Concepts of Modern Art. From Fauvism to Postmodernism*, Ed. N. Stangos, (London, Thames & Hudson, 2001), pp. 256-270.

Sommerich, Phillip. 'Slice of action', *Hamp&High*, 21 May 1982.

Souster, Tim. 'First performances who's exhausted?', *Tempo*, 87, (1968-69), pp. 23-26.

Stiles, Kristine. 'Junk art', *Grove Art Online*, http://www.oxfordartonline.com/subscriber/article/grove/art/T045356, (accessed 28 April 2012).

Stirner, Max. *The Ego and Its Own*, Edited by David Leopold, (Cambridge, Cambridge University Press, 1995).

Stockhausen, Karlheinz. *Aus den sieben Tagen (From the Seven Days)*, (Vienna, Universal Edition, 1970).

Stockhausen, Karlheinz. Maconie, Robin. *Stockhausen on Music*, (London and New York, Marion Boyars, 1991).

Stockhausen, Karlheinz. Kohl, Jerome. 'Electroacoustic performance practice', *Perspectives of New Music*, 34, 1 (1996), pp. 74-105.

Stockhausen, Karlheinz. Witts, Dick. 'Stockhausen vs. the "technocrats"', *Audio Culture: Readings in Modern Music*, Ed. C. Cox, D. Warner, (New York, Continuum, 204), pp. 381-385.

Stuart, Caleb. 'Yasunao Tone's wounded and skipping compact discs: From improvisation and indeterminate composition to glitching CDs', *Leonardo Electronic Almanac*, 10, 9, (2002), http://leoalmanac.org/journal/Vol_10/lea_v10_n09.txt, (accessed 3 February 2012).

The Museum of Modern Art. *MoMA Highlights*, (New York, The Museum of Modern Art, 2004).

Thomas, Philip. 'A Prescription for Action,' *The Ashgate Research Companion to Experimental Music*, Edited by James Saunders, (Aldershot, Ashgate, 2009), pp. 77-98.

Thomas, Philip. Chase, Stephen. *Changing the System: the Music of Christian Wolff*, (Farnham, Surrey, Ashgate, 2010).

Thomson, Peter. Sacks, Glendyr. *The Cambridge Companion to Brecht*, (Cambridge, Cambridge University Press, 2006).

Thoreau, Henry D. *Walden; or, Life in the Wood*, (Mineola, New York, Dover Publications, 1995).

Tilbury, John. 'Cornelius Cardew', *Contact*, 26, (1983), pp. 4-12.

Tilbury, John. *Cornelius Cardew (1936-1981): A Life Unfinished*, (Essex, Copula, 2008).

Toop, David. *Ocean of Sound Aether Talk, Ambient Sound and Imaginary Worlds*, (London, Serpent's Tail, 1995).

Toop, David. 'Not Necessarily Captured, Except as a Fleeting Glance,' *Leonardo Music Journal* 11, 1, (2001), pp. 89-94.

Toop, David. 'Frames of Freedom Improvisation, Otherness and the Limits of Spontaneity,' *Undercurrents: The Hidden Wiring of Modern Music*, Edited by Rob Young, (London, Continuum, 2002), pp. 233-248.

Toop, David. *Haunted Weather: Music, Silence, and Memory*, (London, Serpent's Tail, 2004).

Toop David. 'Search and Reflect: The Changing Practice of Improvisation,' *New Sound* 32, (2008), pp. 119-129.

Toop, David, *Sinister Resonance The Mediumship of the Listener*, (London and New York, Continuum, 2010).

Toop, David. 'New and Rediscovered Musical Instruments Rediscovered,' *Material Culture and Electronic Sound*, Edited by Fode Weium and Tim Boon, (Washington, D.C., Smithsonian Institution Scholarly Press; Lanham, Md., Rowman & Littlefield, 2013a), pp. 259-270

Toop, David. 'The Generation Game: Experimental Music and Digital Culture,' *Audio Culture: Readings in Modern Music*, Edited by Christoph Cox and Daneil Warner, (New York, London, Bloomsbury, 2013b), pp. 239-247.

Tortora, Daniela. *Nuova consonanza: trent'anni di musica contemporanea in Italia (1959-1988)*, (Lucca, Libreria musicale italiana, 1990).

Varèse Edgar. 'The liberation of sound', *Contemporary Composers on Contemporary Music* (1998) Ed. E. Schwartz, (New York, Da Capo Press, 1998), pp. 196-208.

Verbeek, Peter-Paul. Vermaas, Pieter E. 'Technological artifacts', *A Companion to the Philosophy of Technology*, Ed. J. K. Berg Olsen et al., (Malden, Massachusetts, Wiley-Blackwell, 2009), pp. 165-171.

Visiting Hugh Davies (Klapper, UK, 1991).

Wagner, Richard. *Judaism in Music and Other Essays*, (Lincoln, University of Nebraska Press, 1995).

Wagner, Richard. *The Artwork of the Future and Other Essays*, (Lincoln, University of Nebraska Press, 1993)

Waisvisz, Michel. *The Crackle History*, (2004), http://crackle.org/CrackleBox.htm, (Accessed on 23 May 2012).

Walker, John A. 'APG: The Individual and the Organisation: A Decade of Conceptual Engineering,' *Studio International*, 980, 1976, pp. 162-5.

Watson, Ben. *Derek Bailey and the Story of Free Improvisation* (London, New York, Verso, 2004).

White, Lynn Jr. 'The historical roots of our ecological crisis', *Science*, 155, (1967), pp. 1203-1207.

Whitehead, Alfred N. (2001) *Dialogues of Afred North Whitehead*, (New Hampshire, David R. Godine, 2001).

Whittall, Arnold. 'Electroacoustic music', *Oxford Music Online*, http://www.oxfordmusiconline.com/subscriber/article/opr/t114/e2223, (accessed 6 February 2012).

Williams, Raymond. *Politics of Modernism*, (London, Verso, 2007).

Wilson, Giles. 'Daphne Oram, the unsung pioneer of techno', BBC News Online, http://news.bbc.co.uk/1/hi/uk/2669735.stm, (2003) (accessed 26 November 2012).

Wrightson, Kendall. 'An introduction to acoustic ecology', *Soundscape: The Journal of Acoustic Ecology*, (2000), http://www.ciufo.org/classes/sonicart_sp09/readings/Intro_AE.pdf (accessed 12 November 2012).

Wolff, Christian. *Prose Collection*, http://www.frogpeak.org/unbound/wolff/wolff_prose_collection.pdf, (accessed 20 May 2012).

Yoshihara, Jori, *The Gutai Manifesto*, http://www.csus.edu/indiv/o/obriene/art112/readings/TheGutaiManifesto.rtf, (accessed 3 February 2012).

Young, La Monte. *Composition 1960 #5*, *An Anthology*, (New York, Heiner Friedrich, 1963), p. 116.

Zilsel, Edgar. *The Social Origins of Modern Science*, (Dordrecht, Kluwer Academic Publishers, 2003).

Zimmermann, Walter. *Desert Plants: Conversation with 23 American Musicians*, (Ann Arbor, University of Michigan Press, 1976).