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Microphones and loudspeakers as musical instruments

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Table of contents

Prefatory matters 10

Abstract 11

Acknowledgements 12

Introduction 14
Scope 14
Artistic research 16
Context 18

Own works 22
1. Actions of Memory (2003) 22
3. Oefening in stilzwijgend zingen (2005) 30
7. Hearing Sirens (2007) (for one performer) 42
8. groene ruis (2007) 45
9. dazwischen (2007) 47
10. Luftschlösser im Bau (2007) 50
12. in blik (2008) 56
15. hout en snaren (2008) 63
17. Ein Oktett für das Quartett (2009) 69
18. Song No 3 (2010) 71
19. When the sound of your voice slips through my fingers (2010) 76
20. Music Stands (2011) 80
1 Beyond the curtain: virtual sound sources and the "true nature" of microphones and loudspeakers

Konzertreform
Invention of sound reproduction technology: invisible music with the help of microphones and loudspeakers
Storage of air pressure waves
Transportation of air pressure waves
Amplification of air pressure waves
Between air and electricity
Microphones and loudspeakers in music
Microphones and loudspeakers: the musical instruments of our age?
The "true nature" of microphones and loudspeakers

2 Four approaches towards microphones and loudspeakers:
reproducing – supporting – generating – interacting

Four approaches towards microphones and loudspeakers
Music and musical instruments
Musical instruments defined in the context of microphones and loudspeakers
Three categories of objects with which music can be made
Acts of sound creation as opposed to the referential character of sound waves
Representing sound reproduction technology as musical instruments or musicians in advertisements
From the phonograph as a musical instrument to the radio as a sound reproduction device
Musical instruments and sound reproduction technology
Semantic acts of sound creation
Recognising the music through the noise
Electricity decouples movement and sound
Approach 1: reproducing
Approach 2: supporting
3 The sound of microphones and loudspeakers

3.1 Transparent devices made audible

3.2 Acoustic feedback

3.3 Unity of sound production with the use of microphones and loudspeakers

3.4 Acoustic feedback: an electro-acoustic oscillator

3.5 Some remarks on the history of acoustic feedback

3.6 A tuning fork oscillator

3.7 Some remarks on the tuning fork

3.8 Nineteenth century research on sound

3.9 Thomas Young: visualising sound

3.10 Hermann von Helmholtz: reversing the tuning fork notation

3.11 Hermann von Helmholtz: Mittönen, a second tuning fork experiment

3.12 Hermann von Helmholtz: reproducing human vowels with tuning forks

3.13 The tympanic principle and the tuning fork principle

3.14 Alexander Bell: using many metal rods to reproduce sound

3.15 Alexander Bell: using symmetrical metal plates to reproduce sound

3.16 Richard Eisenmann: an electric piano with tuning forks

3.17 George Dieckmann: a piano string oscillator

3.18 Bechstein, Siemens and Nernst: a piano with a loudspeaker

3.19 Relating the tuning fork and tympanic principles to the four approaches

4 Interacting with microphones and loudspeakers:
movement, material and space

4.1 MOVEMENT

4.2 Movement 1: changing the distance between microphone and loudspeaker:

Quintet by Hugh Davies
Some remarks on acoustic feedback in music: from mistake to music
Movement 2: introducing silence: Pendulum Music by Steve Reich
Movement 3: listening as a performative act: Bird and Person Dyning by Alvin Lucier
Movement 4: interacting with another sound source: Green Piece by Anne Wellmer
Movement 5: amplification only: Mikrophonie I by Karlheinz Stockhausen
Microphone movements in amplification: supporting or interacting?
Movement 6: moving loudspeakers: Speaker Swinging by Gordon Monahan and Three Short Stories and an Apotheosis by Annea Lockwood
From movement to material
MATERIAL
Material 1: everyday actions amplified: coffee making by Valerian Maly and 0'00'' by John Cage
Some remarks on the sound of contact microphones
Material 2: musical instruments and contact microphones:
Inside Piano by Andrea Neumann
Material 3: new instruments through amplification:
Apple Box Double by Pauline Oliveros and Shozyg by Hugh Davies
Material 4: acoustic feedback through different materials: Nodalings by Nicolas Collins
Back to a circle of feedback
Some remarks on the materiality of microphone and loudspeaker diaphragms
Material 5: every loudspeaker a different voice: Rainforest by David Tudor
Material 6: the audible becomes feelable: Aptium by Lynn Pook, and Merzbow
SPACE
Space 1: interaction between microphones and small spaces: Music for piano with amplified sonorous vessels by Alvin Lucier
Space 2: interaction between loudspeakers and small spaces: Loudspeakers in brass instruments and focused loudspeakers
Some remarks on spatialisation with loudspeakers
Space 3: interaction between loudspeakers and performance space:
......sofferte onde serene... and Guai ai gelidi mostri by Luigi Nono
Space 4: loudspeaker orchestras: Acousmonium by François Bayle
Space 5: sound unified in space and dispersed in space
Performances by Eliane Radigue and Der tönende See by Kirsten Reese
Space 6: closing the acoustic feedback loop again: Hörbare Ökosysteme by Agostino Di Scipio
Overview of strategies for interacting with microphones and loudspeakers
Some remarks on composing with microphones and loudspeakers
5 Composing with microphones and loudspeakers 255
Using the four approaches for composing 255
Recognising the reproducing approach: the Edison tone tests 257
Composing with the reproducing approach: Nothing Is Real (Strawberry Fields Forever) by Alvin Lucier 259
Musical gestures and gestural identities 261
Gestural identity shifts: combining the supporting and interacting approach:
Windy Gong by Ute Wassermann 263
Gestural identity shifts through sound only: snare drum pieces by Wolfgang Heiniger 266
Combining the generating and interacting approach 269
Composed relationships between body movements and resulting sound 270
Performers changing their identity: tubes by Paul Craenen 272
Open musical instruments 276
The reproducing approach controls the interaction: Open Air Bach by Lara Stanic 277
Resistances and resonances of microphones and loudspeakers 279
The future of microphones and loudspeakers: between air and electricity 282

Appendix 1 Technology of microphones and loudspeakers 285

Appendix 2 Biographies 290

Bibliography 304

Samenvatting 316

Curriculum Vitae 317

DVD 1
7 Hearing Sirens
8 groene ruis
11 Wings
12 in blik
18 Song No 3
25 Klangverordnung

DVD 2
9 dazwischen
10 Luftschlösser im Bau
13 Mit Luft gebaut - Musik aus der Dose
15 hout en snaren
16 Das Quartett oder Schumann im Netz
17 Ein Oktett für das Quartett
19 When the sound of your voice
21 Piece d’ameublement
22 Stumme Diener
23 Geluid gemeten
24 Ways and Means
27 Square Head
28 Extended Ears

CD 1
7 Hearing Sirens [sound file for performance]
17 Ein Oktett für das Quartett [sound file for performance]
25 Klangverordnung [sound file for performance]
27 Square Head [sound file for performance]

CD 2
3 Oefening in stilzwijgend zingen [sound file for performance]
5 Blik na blik [concert recording]
14 Im freien [concert recording]
15 hout en snaren [concert recording]
Prefatory matters

This dissertation is written in partial fulfilment of the requirements for the doctoral degree program docARTES of the Orpheus Institute and Leiden University. The remaining precondition consists of a concert, two DVDs and two CDs with video and audio material documenting several of the 28 compositions written for this doctoral project, and two websites (one with further documentations of all 28 compositions written during the doctoral trajectory: www.cathyvanmek.net/ownworks/, the other containing audio and video examples of the works discussed in this text: www.cathyvanmek.net/videoexamples/).
Abstract

My research takes the artistic use of the devices that bring sound waves into electricity and back as its central focus point; they are commonly called microphones and loudspeakers. These devices have become essential for many forms of music making. Through the same pair of loudspeakers, people listen to diverse music and sound, such as violin sonatas, rock songs or simply the latest news. Accordingly, microphones and loudspeakers are often designed to remain transparent; that is, "inaudible" in the final sound result.

From the 1950s on, microphones and loudspeakers started to play a crucial role not only in the mere reproduction of sound, but also in the creation of music. Composers and musicians often described these new possibilities of using microphones and loudspeakers as musical instruments. This resulted not only in many pieces and performances that used microphones and loudspeakers in unusual ways but also in many new possibilities for musical composition.

Confronted with microphones and loudspeakers through my own practice as a composer using electro-acoustic media, I investigated how microphones and loudspeakers could become musical instruments. This resulted in 28 compositions and a text about historical, theoretical, and practical aspects of the subject. To obtain a clear picture of the possibilities of microphones and loudspeakers in music, I develop four approaches in my dissertation. Three of them focus on the transparent use (reproducing, supporting and generating). The fourth approach focuses on the use of microphone and loudspeakers in an opaque way; that is, as musical instruments. I call this the interacting approach, since the music should, in contrast to the other approaches, not be transmitted through microphones and loudspeakers, but formed, coloured, and changed by these devices.

The fourth approach was the starting point for 28 compositions, in which I investigate in what ways one could interact or "play" microphones and loudspeakers. This resulted in a categorisation of three interaction parameters: movement, material and space. I looked at how these interaction parameters might be recognised in the work of other musicians and composers, as well as how the interaction with microphones and loudspeakers influenced compositional form, the performance situation, and the relationship between musician and musical instrument. This resulted in a theory and praxis in which I elaborate upon unique features of music, composed with microphones and loudspeakers.
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My research would not have been possible without the support and help of many others.

Richard Barrett has been my mentor for many years and has led my research in the right direction, giving important input for the development of my compositions and has brought numerous musicians and composers, discussed in my thesis, to my attention. The intensive discussions with Marcel Cobussen and his engaged critique have been very helpful to order my thoughts. Frans de Ruiter has accompanied my work on my thesis with attention and enthusiasm. All three have thoroughly read, corrected, and commented on my manuscript at several stages of elaboration.

During my years in Berlin, Wolfgang Heiniger very generously shared his thoughts on electronic music and encouraged me many times to jump into the unknown. Owing to him, I got in touch with the Music and Media Art Department at the Bern University of the Arts, where I started to teach in 2007. Over the years, I have had many exchanges with my colleagues Ellen Fellmann, Michael Harenberg, Veronika Klaus, Valerian Maly, Beat Müller, Benoît Piccand, Iris Rennert, Marcel Sägesser, Peter Scherer, and Daniel Weissberg that have influenced my thoughts on my research subject. Notably, to pursue the developments of the research project Klang (ohne) Körper, initiated by my colleagues Michael Harenberg and Daniel Weissberg, has been very fascinating. My participation in the research project Stimmung und Temperatur – Von der Schwierigkeit der Gleichschaltung, initiated by Roman Brotbeck at the University of the Arts Bern brought me many new insights on nineteenth century acoustics. To share my ideas with my students as well as often trying them out in hands-on situations has been not only useful for my research but also very enjoyable.

For many of the 28 compositions, I had the opportunity to collaborate with many other artists, experimenting and exchanging ideas. I am very thankful to all of the artists with whom I have worked over the past years. Working with Andre Bayer, Nelly Bütkofer, Paul Craenen, Frederik Croene, Raphaela Danksagmüller, Alexandros Drymonitis, Kerstin Fuchs, Daniel Göritz, Susanne Kabalan, Juan Sebastian Lach Lau, Gerd Lünenburger, Neue Vocalsolisten Stuttgart, James Orsher, Daniel Ott, Meriel Price, Matthias Rebstock, Teresa Rotemberg, Jan Schacher, Maren Schäfer, Tobias Schwencke, Wouter Snoei, Enrico Stolzenburg, and Susanne Zapf enlarged my horizon and provided me with many new ideas. I am also very grateful to all the concert and festival
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During my research I have had the opportunity to converse or correspond with many of the artists whose work I discuss. Sometimes I even got a private demonstration of a work or technology. I thank Paul Craenen, Wolfgang Heiniger, Annea Lockwood, Valerian Maly, Andrea Neumann, Kirsten Reese, Lara Stanic, Birgit Ulher, Ute Wassermann, and Anne Wellmer for sharing their time and thoughts on their work with me. I am grateful as well to the many experts who provided me with invaluable insights. My conversations with Klaus Heinz, Onno Mensink, Daniel Ploeger, Peter Swinnen, Kees Tazelaar, and Alvise Vidolin have extended my knowledge on many specific subjects in this thesis.

My research took place in the framework of the doctoral degree program docARTES of the Orpheus Institute and Leiden University. I would like to thank everybody involved in these institutions for the support they gave me during these years. Sandra Paine and Sharon Stewart have done the editing of my text, for which I am very grateful. My sincere thanks goes also to my parents and sisters—all musicians—who supported me in many ways. We exchanged opinions on many of my works and even shared the stage occasionally. Many thanks to the ones I did not have to mention since they know that I could not have done, or do, without them. Last, I have to acknowledge that, while so much knowledge and critique of others has made this work better, the remaining faults and mistakes are entirely my own.