Between air and electricity : microphones and loudspeakers as musical instruments

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Between air and electricity

Microphones and loudspeakers as musical instruments

Cathy van Eck

geboren te Leidschendam in 1979

Between air and electricity

Microphones and loudspeakers as musical instruments

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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.cathyvaneck.net/ownworks/, the other containing audio and video examples of the works discussed in this text: www.cathyvaneck.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 Bütikofer, Paul Craenen, Frederik Croene, Raphaela Danksagmüller, Alexandros Drymonitis, Kerstin Fuchs, Daniel Göritz, Susanne Kabalan, Juan Sebastian Lach Lau, Gerd Lünenbürger, 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

organisers whose host I was over the past years and without whom I could never have tried out how my ideas function live on stage.

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.