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Acknowledgments

This thesis is the outcome of an “autonomous Ph.D.” trajectory, a probably unusual experiment in graduate research.

Here, as elsewhere, the candidate is recruited from the ranks of M.Sc. students, and then employed by the University. However, unlike elsewhere, the candidate is also given carte blanche as to what to research – a very rare opportunity indeed. Furthermore, the candidate does not become part of a research group (for a definition, see [Gosling and Noordam 2006]); does not receive supervision by a scientist publishing in the field of choice; and is encouraged to work on multiple subjects in different fields.

I thank Clara Takken for being a rock solid true friend throughout the ups and downs this entailed.

Aside from the research excursions of Chapters 5 and 6, it turned out that the main subject itself already required entering multiple different areas of expertise. These included computer science; new musical interfaces; the history and prehistory of musical instruments; related fundamentals and specifics of human anatomy and neural processes; the construction of high-performance electronics; and haptics.

Of these areas, my formal background included computer science only. Many thanks, therefore, to the Electronics Department (ELD) at the Leiden Institute of Physics, to the Fijnmechanische Dienst (FMD) at the Faculty of Science, and to the Elektronische Werkplaats (EWP) at the Royal Conservatoire – more specifically, to Rene Overgauw, Arno van Amersfoort, and Lex van den Broek – for generously providing their indispensable advice and practical support, regarding certain electronic components, during various stages of prototype development (see Chapters 2 and 3).

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Thanks to all test subjects for kindly volunteering in the absence of payment.

One consequence of not being part of a research group was receiving first feedback during peer review. This provided a non-optimal learning environment. I thank Walter Kosters for creating an exception in this regard, by kindly providing beforehand feedback on the formal notation used in Chapter 6. The research excursion in that chapter was inspired by the Lilac Chaser illusion by Jeremy Hinton [Hinton 2005], and by its online explanation by Michael Bach. In general, I would like to thank the anonymous reviewers who provided constructive criticisms and helpful suggestions.

Another consequence of not being part of a research group was sole authorship. The happy exception in this regard was setting up an informal group with the M.Sc.
students Jeroen Jilissen, Dünya Kirkali, Alwin de Rooij, Hanna Schraffenberger, and Arnout Terpstra, for the research excursion in Chapter 5. Many thanks to them, for their sustained efforts participating in this project. Also, many thanks to the Media Technology programme at Leiden University, for funding the presentation by one of the M.Sc. students at the UIST conference in Canada. And of course, many thanks to Paul Dietz and the Microsoft Applied Sciences Group, for providing us with pressure-sensitive keyboard prototypes.

Going to all conferences alone (in Europe, including Paris, Genova, and the workshop in Stockholm), it was very important to meet nice people, from various continents. I thank them all, and especially Chris Kiefer, Robin Price, Peter Bennett, and Andy Dolphin, for the interesting discussions and good company.

I have powerful memories of the three separate visits to the US to present my work at conferences. These were held at Carnegie Mellon in Pittsburgh, at MIT in greater Boston, and at Georgia Tech in Atlanta. Thanks to the US National Science Foundation (NSF) for funding one of these visits. Also, many thanks to Mark D. Gross, Ellen Yi-Luen Do, Ivan Poupyrev, and Ian Oakley, who guided the fantastic TEI Graduate Student Consortium I attended, and to Ofer M. Shir for the tour of Princeton.

Another consequence of not being part of a research group was the urgent need to try and find senior scientists publishing in the field through conference visits. I was happy to meet Sile O’Modhrain during my demonstration session at MIT, which then turned into an exciting ad hoc experimentation session, testing the KSFT system of Chapter 3 to its limits. I received her advice and also a kind invitation to visit the Sonic Arts Research Centre (SARC) at Queen's University Belfast, where I also met some of her Ph.D. students and other visitors.

I would also like to thank the people I met at the EuroHaptics conference in Amsterdam. Given the many participants and my lack of background in haptics, winning the Best Demonstration Award with the CT system of Chapter 3 was something I had not dared to hope for. It was a very special moment. I am also very grateful to Cécile Pacoret, who subsequently invited me and the CT system over to the Institut des Systèmes Intelligents et de Robotique (ISIR) in Paris. I was glad to be there, to see everything and meet everyone, including Vincent Hayward, to whom I am grateful for his feedback and advice.

Last, but certainly not least – considering the very good memories of the many and happily busy demonstration sessions – thanks to all the people who have tried my demos over the years, including those shown on the opposite page. Thank you for your feedback, and thank you for your meaningful encouragement.
