



ROUTLEDGE

# THE MUSIC PRACTITIONER

Research for the Music Performer,  
Teacher and Listener

EDITED BY  
JANE W. DAVIDSON

An **Ashgate** Book

# THE MUSIC PRACTITIONER



**Taylor & Francis**

Taylor & Francis Group

<http://taylorandfrancis.com>

# The Music Practitioner

Research for the Music Performer, Teacher and Listener

*Edited by*  
JANE W. DAVIDSON

 **Routledge**  
Taylor & Francis Group  
LONDON AND NEW YORK

First published 2004 by Ashgate Publishing

Published 2016 by Routledge

2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

711 Third Avenue, New York, NY 10017, USA

*Routledge is an imprint of the Taylor & Francis Group, an informa business*

Copyright © Jane W. Davidson 2004

Jane W. Davidson has asserted her right under the Copyright, Designs and Patents Act, 1988, to be identified as Editor of this Work.

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

Notice:

Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

### **British Library Cataloguing in Publication Data**

The music practitioner : research for the music performer,  
teacher and listener

1. Musicology 2. Music – Performance 3. Music appreciation

4. Musicology – Methodology

I. Davidson, Jane W.

780.72

### **Library of Congress Cataloging-in-Publication Data**

The music practitioner : research for the music performer, teacher and listener / edited by  
Jane W. Davidson.

p. cm.

Includes bibliographical references and index.

Contents: The practitioner and research – Theory and experimentation :  
understanding pitches, tuning and rhythms – Practitioners investigating their daily  
work – Researching musician identity and perception – Adopting innovative  
research approaches – A final note.

ISBN 0-7546-0465-9 (alk. paper)

1. Music—Psychological aspects. I. Davidson, Jane W.

ML3830.M9815 2003

781'.11—dc21

2003052349

ISBN 13: 978-0-7546-0465-5 (hbk)

# Contents

<i>List of Figures</i>	<i>ix</i>
<i>List of Tables</i>	<i>xi</i>
<i>List of Music Examples</i>	<i>xiii</i>
<i>Notes on Contributors</i>	<i>xv</i>
<i>Foreword</i>	<i>xxiii</i>
<i>Acknowledgements</i>	<i>xxv</i>
1 Introduction	1
<i>Jane W. Davidson</i>	
<b>Part 1: The Practitioner and Research</b>	
2 Psychology and the Music Practitioner	9
<i>Aaron Williamon and Sam Thompson</i>	
3 What and Why Do We Need to Know about Music Psychology Research to Improve Music Instrument Teaching?	27
<i>Kacper Miklaszewski</i>	
4 The State of Play in Performance Studies	37
<i>John Rink</i>	
5 A Case Study of a Practical Research Environment: Sibelius Academy, Helsinki	53
<i>Kari Kurkela</i>	
<b>Part 2: Theory and Experimentation: Understanding Pitches, Tuning and Rhythms</b>	
6 From Acoustics to Psychology: Pitch Strength of Sounds	67
<i>Andrzej Rakowski</i>	
7 ‘Expressive Intonation’ in String Performance: Problems of Analysis and Interpretation	79
<i>Peter Johnson</i>	
8 Do Compositions Reveal Information about Historical Tuning?	91
<i>Bernhard Billeter</i>	
9 Enrichment of Music Theory Pedagogy by Computer-based Repertoire Analysis and Perceptual-cognitive Theory	101
<i>Richard Parncutt</i>	

- 10 The Perceptual Space Between and Within Musical Rhythm Categories 117  
*George Papadelis and George Papanikolaou*

### **Part 3: Practitioners Investigating their Daily Work**

- 11 Making a Reflexive Turn: Practical Music-making Becomes Conventional Research 133  
*Jane W. Davidson*
- 12 Singing by Heart: Memorization Strategies for the Words and Music of Songs 149  
*Jane Ginsborg*
- 13 Formal and Non-formal Music Learning amongst Rock Musicians 161  
*Anna-Karin Gullberg and Sture Brändström*
- 14 Priorities in Voice Training: Carrying Power or Tone Quality 175  
*Allan Vurma and Jaan Ross*

### **Part 4: Researching Musician Identity and Perception**

- 15 Rethinking Voice Evaluation in Singing 193  
*António G. Salgado*
- 16 Assessing Vocal Performance 201  
*Daniela Coimbra and Jane W. Davidson*
- 17 Starting a Music Degree at University 215  
*Stephanie E. Pitts*
- 18 Tracing a Musical Life Transition 225  
*Karen Burland and Jane W. Davidson*
- 19 Flawed Expertise: Exploring the Need to Overcome the Discrepancy between Instrumental Training and Orchestral Work – the Case of String Players 251  
*Daina Langner*

### **Part 5: Adopting Innovative Research Approaches**

- 20 A New Method for Analysing and Representing Singing 263  
*Stefanie Stadler Elmer and Franz-Josef Elmer*
- 21 The Fears and Joys of New Forms of Investigation into Teaching: Student Evaluation of Instrumental Teaching 285  
*Ingrid Maria Hanken*

22	A Role for Action Research Projects in Developing New Pedagogical Approaches to Aural and Musicianship Education <i>Nicholas Bannan</i>	295
23	A New Approach to Pursuing the Professional Development of Recent Graduates from German Music Academies: The Alumni Project <i>Heiner Gembris</i>	309
24	What Music Psychology is Telling Us about Emotion and Why It Can't Yet Tell Us More: A Need for Empirical and Theoretical Innovation <i>Matthew M. Lavy</i>	319
<b>Part 6: A Final Note</b>		
25	Musical Chills and Other Delights of Music <i>Jerrold Levinson</i>	335
	<i>Index</i>	353



**Taylor & Francis**

Taylor & Francis Group

<http://taylorandfrancis.com>

# List of Figures

2.1	A cumulative record of practice of section C of the Presto of Bach's <i>Italian Concerto</i> (taken from Chaffin and Imreh, 1997, p. 329)	22
4.1	Chopin, E minor Prelude Op. 28 No. 4: registral contour in profile	46
4.2	Chopin, E minor Prelude Op. 28 No. 4: 'refraction' in interpretation	48
5.1	Interaction between artistic and research activities	61
6.1	Results of tuning a pure tone in equal pitch to the investigated instrumental sound	71
6.2	Pitch level and pitch strength in sounds of musical instruments	74
7.1	Spectrum analysis of Bach's C minor Sarabande at bar 1: B2, C3	80
7.2	Bach's C minor Sarabande at bar 1: Harmonics of B2 and C3	81
7.3	Tunings compared with Just Intonation	82
7.4	Tuning of falling and rising leading notes: Op. 135iii, bar 3	85
7.5	Melos Quartet: Harmonics of three tones	86
7.6	Lindsay Quartet: Harmonics	88
9.1	Comparison of major and minor K-K profiles with calculated chroma salience within the corresponding tonic triad	108
10.1	Sequence of rhythm variations at medium tempo (B1–B16) and their equivalent durational ratios ( $b/a$ )	123
10.2	Goodness-rating means for all metrical interpretations along the sequence of stimuli (B1–B16) at medium tempo	126
11.1	Jane in relation to the rest of the group	142
11.2	Belinda in relation to the rest of the group over time	143
14.1	Two examples of formant frequency analysis, performed by LPC formant history technique	182
14.2	The shape of the LTAS of different recorded voices	185
14.3	Level of the singer's formant in the voice spectrum as a function of the length of training, approximated by linear regression	186
14.4	Average voice quality, estimated by four experts, as a function of the length of training, approximated by linear regression	187
18.1	Tripartite model of success	241
18.2	Tripartite model of success for Simon (PPC)	242
18.3	Tripartite model of success for John (PNC)	243
19.1	The mean scores for dominance for the four groups of musicians	255
20.1	Example of a print-out of our pitch-analysing program	270

20.2	An example of the graphical representation of a song actually produced by a girl at age 4.5 years	273
20.3	Musical transcription of the same vocal production on which Figure 20.2 is based	274
22.1	Moving to the subdominant	299
22.2	Moving to the dominant	299
22.3	Developing the use of inversions	300
22.4	Moving a melody part against chords	301
22.5	Modulation	301
22.6	Free modulation ‘journeys’ through cutting-and-pasting	301
22.7	Some sample polyphonic material accessible through Harmony Signing	302
23.1	The design of the Alumni Project	313

# List of Tables

2.1	A sample of the terms from the Observational Scale for Piano Practising	16
5.1	Doctoral programmes at the Sibelius Academy (Doctor of Music)	54
6.1	Pitch level (PL) and pitch strength (PS) of sounds determined in the experimental series of pitch matchings	73
9.1	Prevalence of root progressions between root-position triads in eighteenth- and nineteenth-century music	107
14.1	Average data on the singer's formant frequency ( $f_{m2}$ , Hz), its level (sform, dB) and the normalized distance between F3 and F4 $[(F4-F3)/F3]$	184
14.2	Correlation between the level of the highest peak between 2 and 4 kHz in the LTAS and the distance between F3 and F4, normalized with respect to F3, in the spectra of male and female voices, performing in two different voice ranges (the keys of E and A minor, respectively)	185
16.1	Mean scores and standard deviations for each assessor	206
18.1	The influence of others	232
18.2	The impact of institutions	234
18.3	The importance of motivation	235
18.4	The development of coping strategies	237
18.5	Music and communication	238
18.6	Music and self-concept	240
19.1	Traits that showed significant effects ( $p < .05$ )	254
20.1	Table of symbols	271



**Taylor & Francis**

Taylor & Francis Group

<http://taylorandfrancis.com>

# List of Music Examples

4.1	Chopin, E minor Prelude Op. 28 No. 4	42
7.1	Casals: Bach, Cello Suite V (BWV 1011) Sarabande, bars 1–8	80
7.2	Beethoven's Lento assai (Op. 135iii), bars 1–6	84
8.1	John Bull, 'Ut, re, mi, fa, sol, la', from the <i>Fitzwilliam Virginal Book</i>	92
8.2	G. Frescobaldi, 'Toccatà Undecima', in <i>Il secondo libro di toccate ...</i> (1637)	94
8.3	G. Frescobaldi, 'Canzona Quinta', in <i>Il secondo libro di toccate ...</i> (1637)	94
8.4	G. Frescobaldi, 'Toccatà per l'Elevazione', third mass of <i>Fiori musicali</i> (1635)	95
8.5	G. Frescobaldi, 'Passacagli from the Balletto Secondo', in <i>Toccatte d'intavolatura di Cimbalo et Organo ... , Libro Primo</i> (1637), bars 4 and 6	95
8.6	G. Frescobaldi, 'Passacagli from the Balletto Secondo', in <i>Toccatte d'intavolatura di Cimbalo et Organo ... , Libro Primo</i> (1637), bar 13	96
8.7	G. Frescobaldi, 'Cento Partite sopra Passacagli', first <i>Altro tono</i>	96
8.8	J.J. Froberger, Suite XIX, Allemande	97
8.9	J.J. Froberger, Suite VII, Courante	98
8.10	J.J. Froberger, Suite VII, Allemande, bars 6 and 7	98
8.11	J.K. Kerll, Toccatà 4	99
13.1	K.G. Johansson, <i>Here I am Again</i>	166
14.1	A phrase from the well-known song 'Ei saa mitte vaiki olla', by the Estonian composer Miina Härma	181



**Taylor & Francis**

Taylor & Francis Group

<http://taylorandfrancis.com>

# Notes on Contributors

## Editor

**Jane W. Davidson** is a Reader in the Department of Music at the University of Sheffield. Jane currently teaches undergraduate courses on the development of musical ability; psychological approaches to performance; gender issues in western art music; the relationship between music, dance and drama; and music therapy. She also teaches components of the MA in Psychology of Music course offered at Sheffield and runs the MA in Music Theatre Studies. She has published work on musical expression, gesture, music practice, and the determinants of musical excellence. From 1997 to 2001, Jane was editor of the international music journal *Psychology of Music* and is associated with a number of other academic publications, sitting on editorial boards. Besides her teaching and research work, Jane performs as a vocal soloist and music theatre director and has appeared at the Queen Elizabeth Hall, St Paul's Cathedral, and the London International Opera Festival.

## Authors

**Nicholas Bannan** is Director of the Music Teaching in Private Practice Initiative, a distance-learning Diploma and Masters programme at the University of Reading. A graduate of Cambridge University, he taught in several schools, including Eton College. He continued to develop his work as a composer, winning the Fribourg Prize for Sacred Music in 1986. He has carried out research into the use of electronic resources in vocal education and the means by which vocal potential can be released in singers of all ages and abilities. He is investigating the role of singing in human development from an evolutionary perspective.

**Bernhard Billeter**, pianist and organist, graduated in Musicology from the University of Zurich. He leads an organ class at the Hochschule für Musik und Theater Zurich and is Lecturer at the University of Zurich. His publications include books on contemporary Swiss composers (Frank Martin, Adolf Brunner, Willy Burkhard), volumes of complete editions (Hindemith, Schoeck) and studies on music theory, the interpretation of early music, musical ornamentation, historical tuning, and so on.

**Sture Brändström** took his piano pedagogic certificate and soloist diploma at the School of Music in Gothenburg. For more than 20 years he has combined piano teaching with public appearances as a pianist. During the 1980s Sture was engaged in research. In 1995 he defended his doctoral thesis in pedagogy at the

University of Umeå. He is currently Research Professor in Music Education at Luleå University of Technology, Sweden. His areas of specialization include instrumental training, action research and education sociology. Sture has published in journals such as the *Bulletin for the Council for Research in Music Education*, the *Canadian Music Educator*, *Research Studies in Music Education*. His recent presentations include International Society for Music Education (ISME) Research Commission 1994, 1998; ISME conferences 1996, 1998, and Australian Society for Music Education (ASME) 1997.

**Karen Burland** studied Music and Music Psychology at BMus and MA level at Sheffield University. She is currently finishing her PhD there under the supervision of Jane Davidson. As a performer, Karen is a frequent solo clarinetist in classical and jazz ensembles. She also plays saxophone and performs backing vocals in a rock band.

**Daniela Coimbra** graduated in Music Education from the Polytechnic Institute of Porto, Portugal. After some experience as a classroom teacher, she went on to study for a Masters degree in Psychology of Music at the University of Sheffield, where she studied for her PhD looking at performance evaluation. She is involved in societies such as the Society for Research in Psychology of Music and Music Education, and European Society for the Cognitive Sciences of Music. She has written a number of journal articles and conference presentations on her PhD topic. Currently she is lecturing in Music Psychology in Portugal.

**Franz-Josef Elmer** is Privatdozent in Theoretical Physics at the University of Basel, Switzerland. His subject areas include nonlinear dynamics and friction. He is also working as a software engineer in the IT industry.

**Heiner Gembris** studied Music and Music Education at the Music Academy of Detmold (Germany), Musicology at the Technische Universität, Berlin and at the Freie Universität, Berlin. In 1985 he was awarded a doctorate from Hamburg (thesis title: 'Musikhören und Entspannung' ['Music Listening and Relaxation']). From 1985 to 1990, he worked in the Music Department at the University of Augsburg. From 1991 to 1997, Heiner was Professor of Musicology at the University of Münster and from 1997 to 2001, Professor at the Martin-Luther-Universität, Halle-Wittenberg. He is currently Professor at the University of Paderborn. Heiner's main research interests are music perception and effects of music listening, and development of musical abilities. In 1998 he published *Grundlagen musikalischer Begabung und Entwicklung* [*Foundations of Musical Ability and Development*] (Augsburg; 2nd edn., 2002).

**Jane Ginsborg** studied music at York University and trained as a singer at the Guildhall School of Music and Drama, London. She was a professional singer

and teacher of singing for a decade before studying Psychology with the Open University. She then undertook a PhD in Music Psychology, under the supervision of John Sloboda, at Keele University. She is currently a Lecturer in Psychology at Leeds Metropolitan University. She has reported her research findings at the British Psychological Society (BPS), Society for Research in Psychology of Music and Music Education (SRPMME) and European Society for the Cognitive Sciences of Music (ESCOM) conferences.

**Anna-Karin Gullberg** graduated in Psychology, Music Psychology and History of Science and Ideas in 1993. Between 1993 and 1997 she taught Psychology and undertook PhD research in Engineering Psychology at Luleå University of Technology in the field of human-computer interaction. Her graduate studies were in Dance (classic, contemporary) and Music (piano, singing) and her postgraduate studies were in Neurology and Music Pedagogy. Since 1995, Anna-Karin has been engaged in doctoral studies at Piteå School of Music. In 1999, she was awarded a Fil. Lic. in the research area of Formal and Non-formal Music Education. She presented a paper about Rock as a Research Field at NorFA, Copenhagen in 1997: 'Rock music making within and outside the School of Music' (published in 1999 as 'Playing by the rules: A study of music-making within and outside the School of Music', Luleå University of Technology, Sweden). In 1996, her paper 'Performance anxiety and coping strategies for musicians' was published in the *Proceedings of the First International Conference on Engineering Psychology and Cognitive Ergonomics*, Stratford-upon-Avon.

**Ingrid Maria Hanken** graduated in Pedagogy from the University of Oslo. Since 1976 she has been Associate Professor of Music Education at the Norwegian State Academy of Music. Her publications include the textbook *Musikkundervisningens didaktikk* [*The Theory of Music Education*], which she co-authored with Geir Johansen (Cappelen Akademisk Forlag, 1998), *Research in and for Higher Music Education. Festschrift for Harald Jørgensen*, co-authored with Siw Graabræk Nielsen and Monika Nerland (Norwegian Academy of Music, 2002), which includes the chapter, 'Academies of Music as Arenas for Education: Some Reflections on the Institutional Construction of Teacher-Student Relationships', co-authored with Monika Nerland. Ingrid has served on several national committees concerned with music education and teacher training. She was a commission member/chair of the ISME Commission on Community Music Activity 1984 to 1994, a member of the Board of the Nordic Association for Music Education 1986 to 1993, and Chair of the Norwegian Affiliation of ISME 1986 to 1993.

**Peter Johnson** is Head of Research at Birmingham Conservatoire, UK, and has been responsible for establishing one of the first practice-based research degree programmes in the UK. He is an experienced conductor and keyboard player and has published on Webern and Performance Studies, including chapters in *Theory*

*into Practice* (Leuven University Press, 1999), and *Music Performance: A Guide to Understanding* (Cambridge University Press, 2002).

**Kari Kurkela** achieved a Piano Diploma from the Sibelius Academy in 1978 and a PhD from Helsinki University in 1986. He has held the post of Piano Teacher in several music schools in Finland. From 1984 to 1989, he held the posts of Junior and Senior Researcher at the Academy of Finland, and in 1987, was Acting Professor of Musicology at Helsinki University. From 1988 to 1989, Kari was Acting Professor of Music Theory at the Sibelius Academy, where he subsequently held the following posts: Professor, Musical Performance Research (1989), Head of the Research Unit (1988–94), Head of the Unit for Doctoral Studies, Solo Department (1994–98), Head of DocMus, Department of Doctoral Studies in Musical Performance and Research (1999–2001), Head of the Graduate School for Performing Arts, Theatre Academy, Helsinki University (1995–2001). Kari has given piano recitals in Finland, Sweden, Germany and France and made recordings for the Finnish Broadcasting Company and television. His main publications are: ‘Note and Tone. A Semantic Analysis of the Conventional Notation’ (doctoral dissertation), *Ajan herkkä kosketus [The Sensitive Touch of Time. A Study of Micro-timing in Piano Performances]*, *Mielen maisemat ja musiikki [Scenes of Mind and Music. Psychodynamics of Performing Music and Creative Attitude]*. He has also written numerous articles on performing music, music philosophy and music education in different countries.

**Daina Langner** graduated in Professional Performance from the Rostock Music Academy and began her career as a violinist in the Berlin Symphony Orchestra in 1993. She combined orchestral playing with Psychology studies at Humboldt University. In the summer of 1999 she worked as an assistant during masterclass and performance training for advanced college and conservatory students in Morris, New York. At present she is a post-doctoral research fellow at the University of Paderborn.

**Matthew M. Lavy**, MA PhD ARCM LTCL, studied Music at Cambridge University, where he stayed on to write a doctoral thesis under the supervision of Dr Ian Cross. His primary research interest is emotional response to music; his PhD models ways in which listening to music can be an emotionally evocative experience. He also has a keen interest in research methodology, particularly that concerning the impact of computer technology on empirical research methods in music psychology.

**Jerrold Levinson** is Professor of Philosophy at the University of Maryland, College Park. His interests in aesthetics include aesthetics of music and film, ontology and definition of art, emotion in art, interpretation in art, the nature of humour, the nature of aesthetic properties, and relations between aesthetics and

ethics. He is the author of *Music, Art, and Metaphysics* (Cornell University Press, 1990), *The Pleasures of Aesthetics* (Cornell University Press, 1996), and *Music in the Moment* (Cornell University Press, 1998), as well as editor of *Aesthetics and Ethics* (Cambridge University Press, 1998), co-editor of *The End of Art and Beyond* (Humanities Press International, 1997), co-editor of *Aesthetics Concepts* (Clarendon Press, 2001) and editor of the *Oxford Handbook of Aesthetics* (Oxford University Press, 2003). A volume of Jerrold's essays has appeared in French translation (*L'art, la musique, et l'histoire*, 1998), and he has contributed articles to *The Dictionary of Art*, *The Blackwell Companion to Aesthetics*, *The Handbook of Metaphysics and Ontology*, *The Encyclopedia of Aesthetics* and *The Routledge Encyclopedia of Philosophy*. Jerrold is on the Editorial Board of the *Journal of Aesthetics and Art Criticism*, and was President of the American Society for Aesthetics from 2001 to 2003.

**Kacper Miklaszewski** was awarded an MA in Piano at the Rimski-Korsakov Conservatory in St Petersburg after which he took graduate studies in Music Education at the Music School, University of Illinois at Urbana-Champaign. He also has a PhD in Theory of Music from the Chopin Academy of Music, Warsaw. From 1974 to 1992, he undertook research work in the Psychology of Music Department, including projects on tests and measurements of musical achievement and the process of learning in music, at the Institute for Research in Music Education, Chopin Academy of Music, Warsaw. From 1974 to 1980, he held the post of Piano Teacher at the Jozef Elsner Music School in Warsaw, and from 1980 to 1981 he held an Assistantship at the Council for Research in Music Education, School of Music, University of Illinois at Urbana-Champaign. From 1992 to 2003, he taught music at the Nonpublic Elementary School no. 34 in Warsaw. From 1993 to 1999 he was editor (evaluation of audio equipment) of *Studio*, a recording and radio magazine in Warsaw. Now he is an editor at *Ruch Muzyczny*, a music journal in the same city. His permanent collaboration with the Chopin Academy of Music in Warsaw includes working with the Department of Musical Acoustics (training listeners-evaluators) and Department of Psychology of Music (musical tests, learning music). Kacper is currently a member of the Editorial Board of Psychology of Music as well as a founding member of the European Society for the Cognitive Sciences of Music (ESCOM).

**George Papadelis** graduated in Musicology from the School of Musical Studies (Aristotle University of Thessaloniki). He has also studied Electrical Engineering at the Polytechnic School of Thessaloniki. During the last five years he has been working on rhythm perception as a PhD candidate at the School of Musical Studies. Since 1988 he has also been a research assistant at the Laboratory of Electroacoustics, Music Technology and Television Systems (University of Thessaloniki) and he participated in many research projects. He is a member of

the European Society for the Cognitive Sciences of Music (ESCOM) and the Acoustical Society of America.

**George Papanikolaou** is Associate Professor (PhD in Electronic Engineering) at the Department of Electrical and Computer Engineering (Polytechnic School – Aristotle University of Thessaloniki). His teaching duties include courses on Musical Acoustics and Music Technology at the School of Musical Studies, as well as courses on Electroacoustics and Television Systems at the Department of Electrical and Computer Engineering. He is the Director of the Laboratory of Electroacoustics, Music Technology and Television Systems (established in 1976), which is supported by both the above departments. He is a member of the Acoustical Society of America, the Audio Engineering Society, the Polish Acoustical Society, the Greek Acoustical Society and the American Association for the Advancement of Science.

**Richard Parncutt** graduated in Music (piano performance) and Science (physics) from the University of Melbourne. His doctoral research at the University of New England, Australia addressed the perception of harmony. He is currently Professor in the Department of Musicology at the University of Graz in Austria. His publications include *Harmony: A Psychoacoustical Approach* (Springer-Verlag, 1989), *Science and Psychology of Music Performance* (Oxford University Press, 2002) and research articles on perception of tonality and rhythm, psychoacoustic/cognitive theories and models, and music performance. He is a member of the editorial advisory boards of *Musicae Scientiae*, *Psychology of Music*, *Journal of New Music Research*, *Music Perception*, *Jahrbuch Musikpsychologie*, and *Research Studies in Music Education*.

**Stephanie E. Pitts** is a lecturer at Sheffield, where she directs the MA in Psychology for Musicians and teaches on a range of musicological subjects including Mozart's Operas. She is author of *A Century of Change in Music Education* (Ashgate, 2000), and is currently writing a book about amateur participation in musical groups. In addition she is co-editor of *British Journal of Music Education*. Stephanie is a pianist who has worked in the past as a repetiteur for amateur opera companies, and is now involved in church music and performs regularly as an accompanist.

**Andrzej Rakowski** is one of Poland's distinguished researchers in the fields of music psychology, musical acoustics and performance. He currently works at the Chopin Academy in Warsaw where he was president from 1981 to 1987. With many internationally cited publications to his name, Andrzej has been a key innovator in the development of the interface between research and practice. He has stood on many prestigious committees and was President of the European Society for the Cognitive Sciences of Music (ESCOM) from 2000 to 2003.

**John Rink** is Professor of Music and Head of Department at Royal Holloway, University of London. He works in the fields of performance studies, theory and analysis, and nineteenth-century studies. He has produced three edited books for Cambridge University Press, *Chopin Studies 2* (1994; with Jim Samson), *The Practice of Performance: Studies in Musical Interpretation* (1995), and *Musical Performance: A Guide to Understanding* (2002), and has published a Cambridge Music Handbook entitled *Chopin: The Piano Concertos* (1997), which draws upon his experience in performing these works. He is currently preparing another book for Cambridge University Press and is one of three Series Editors of *The Complete Chopin – A New Critical Edition* as well as director of two major online Chopin editions.

**Jaana Ross** graduated in music theory from the Tallinn State Conservatoire in 1980, and undertook PhD research at the Moscow State Conservatoire. He earned his first PhD in Music Theory in 1988 and second PhD in Psychology in 1992 from the Abo Akademi, Finland. His publications include a number of papers on psychoacoustics, music acoustics, and psychology of music, in the *Journal of the Acoustical Society of America*, *Perception and Psychophysics*, *Music Perception*, *Language and Speech*, *NeuroReport*, and elsewhere. He now combines teaching and research at the University of Tartu and at the Estonian Academy of Music, Tallinn, with administrative work as the Dean of the School of Humanities at Tartu. He is a member of the European Society for the Cognitive Sciences of Music (ESCOM).

**António G. Salgado** graduated in Philosophy from the University of Oporto and at the same time completed the Superior Diploma in Singing at the National Conservatory of Lisbon, Portugal. In 1989, he completed his Master's degree in 'Lied und Oratorium' at the Hochschule für Musik und Darstellende Kunst, Salzburg, with a thesis entitled 'Aus der Mythologie', an essay on the meaning of mythology in Franz Schubert's Lied works. Since 1993, António has been Vocal Teacher in the Music Department, University of Aveiro, Portugal, and in 2003 completed a PhD in Performance Practice at the University of Sheffield. His published works include 'A Formação do Cantor Profissional' ['Rethinking the "Teacher–Student" Interactive Relationship in the Singing Learning Process'], paper presented during the 'First Latino–Americano Meeting of Musical Education', Salvador, Bahia, Brazil, and published by *ABEM* magazine, October 1998; 'Prolegómenos a uma Teoria do Gesto Vocal' ['Introduction to a Theory of the Vocal Gesture'], paper presented during the 'Second Conferencia Iberoamericano de Investigación Musical', Lanús, Buenos Aires, Argentina and published by the University of Lanús (Universidad Nacional de Lanús), in June 1998.

**Stefanie Stadler Elmer** is Lecturer of Psychology at the University of Zurich and of Education at Lucerne, Switzerland. Currently, she teaches music and

language development, and research methods. Since the early 1980s she has been doing research in Developmental and Music Psychology (Switzerland, Germany, USA), which has been supported by several grants and fellowships. She has published two books (in German), *Play and Imitation – Development of Musical Activities* (2000), and *Children Sing Songs – Cultivating One's Vocal Expression* (2002) and many articles and chapters in German and English. Her main interests concern the development of consciousness and identity, the symbols used to express these by vocal means (speaking, singing), and cultural diversity. Since her childhood, she has played the piano and sung in choirs.

**Sam Thompson** is a graduate of the University of Cambridge and holds an MA in Psychology for Music from the University of Sheffield. He is currently studying for a PhD at the University of London while working as a researcher investigating music and performance at the Royal College of Music, London. He is an active clarinettist and composer, having had many of his arrangements of the major opera repertoire performed by the English Touring Opera Company.

**Allan Vurma** graduated in Opera and Recital Singing and Voice Pedagogy from the Estonian Academy of Music in 1990 and in Radio Engineering from Tallinn Polytechnic Institute in 1978. He is working as a soloist in the professional Estonian Philharmonic Chamber Choir and is teaching Voice Methodology in the Estonian Academy of Music. During the last few years he has researched singing voice acoustics with the support of the Estonian Science Foundation.

**Aaron Williamon** initially studied in the USA, but moved to England for PhD work at the University of London. He currently works in the Centre for the Study of Music Performance (CSMP), Royal College of Music. He has published widely, and is currently editing a book for Oxford University Press entitled: *Enhancing Musical Performance*. Besides his academic career, Aaron is a keen jazz trumpeter.

# Foreword

John Sloboda

Contemporary western music psychology can trace its roots to the 1960s and the rise of cognitive psychology as a dominant paradigm for exploring and understanding the human mind. These roots gave the discipline some very important positive attributes: scientific rigour, well-established methodologies, and theoretical incisiveness. Experimental psychologists, working in the main in traditional psychology departments, spearheaded the development of new scholarly bodies, new specialist journals, and the acceptance of high academic standards through such mechanisms as anonymous peer review.

These same roots, however, gave rise to some limitations which the field has needed to address. The first of these was a focus on the listener rather than the practitioner. The second was a concentration on processes that span a few seconds, rather than those spanning minutes, hours, or years. The third was a priority for fundamental and basic research over applied research. It has been heartening to see researchers taking productive steps to overcome all these limitations in recent years. First, the study of music performance is now a rich and diverse research sub-discipline that is undoubtedly one of the major success stories of the last 15 or so years. Second, researchers have developed ever more ingenious ways of tapping processes that take place over long time spans, both within an extended musical work, but also over significant time periods within the life-span of an individual. Third, researchers have begun to take seriously the needs and priorities of practitioners (the people who produce, perform, and support musical outputs of all kinds). These three developments are linked. It is hard to undertake research of real relevance for practitioners unless it addresses music performance, and unless it has something to say about the long-term factors that influence the acquisition and growth of music performance skills.

This book represents an important new step on the road to a truly applicable music psychology. Its primary focus is on the development of the professional performing adult musician, and throughout its pages are unique glimpses into the world of young adult performers, often reflecting incisively on aspects of their own experience and training. These insights are not, in the main, provided by researchers ‘parachuting in’ from the detached heights of a nearby psychology department. The majority of contributors in this book are ‘at the coal face’, delivering music training and education in the context of music colleges, conservatoires and university music departments. The issues they address are often exactly the ones that they need solutions for in their everyday work of shaping tomorrow’s professional musicians. The result is doubly authentic – representing the concerns of both the teacher and also those being taught.

This book is, in fact, the outcome of initiatives which go wider than the authors of the 25 chapters. Many of these authors were participants at an international conference on 'Research Relevant to Music Conservatoires and High Schools' held at the Lucerne Conservatoire in Switzerland, under the auspices of the Swiss Science Ministry and the European Society for the Cognitive Sciences of Music (ESCOM). This conference, jointly chaired by Thüring Bräm, Jane Davidson, Hubert Eiholzer, and myself, came about in response to a growing international realization that those involved in the training of professional musicians needed to define and grasp research opportunities which reflected their own needs and priorities, rather than attempting pale imitations of what was going on in nearby university psychology or musicology departments. This conference was supported by the European Association of Conservatoires (AEC), and it is heartening to see the increasing number of conservatoires around the world that now consider music psychology to be an integral part of their work, and take it for granted that psychologists should be included among their staff.

What we seem to be seeing is an increasing acceptance within the music profession that the training and support of professional musicians is a multidisciplinary endeavour, requiring, alongside the central inputs of experienced music practitioners, the contributions of a range of other disciplinary specialists, including health professionals, psychologists, exercise specialists, and those with expertise in business, management, and public relations. Such expertise has long been available within the training and support systems in sport and athletics. Performing musicians, who are athletes of the hand and voice, deserve the support of the full range of disciplines that can help them achieve and maintain the high standards which are integral to their success. This book is a small, but significant, sign of a new determination on the part of both practitioners and researchers to make their relationship really work to the direct benefit of performing musicians and, indirectly, therefore, to all those who are affected and inspired by their performances.

# Acknowledgements

Several people deserve special mention for the assistance they have contributed to the preparation of this book. Thüning Bräm, the Director of the Luzern Konservatorium, for hosting the meeting out of which this project grew; the Scientific Committee of the European Society for the Cognitive Sciences of Music (ESCOM) for helping to select the authors for this project; Rosie Burt and Martin Haywood in Sheffield and Amy Eiholzer-Silver in Lugano for their assistance with the layout and content of the chapters; and Rachel Lynch and Kristen Thorner from Ashgate and the copy-editor Sarah Price, who supported the book's production. Without the skill, organization, endeavour and patience of Hubert Eiholzer – especially in the early stages of the project – *The Music Practitioner* would not exist, so my deepest thanks go to him.



**Taylor & Francis**

Taylor & Francis Group

<http://taylorandfrancis.com>

## Chapter 1

# Introduction

Jane W. Davidson

In recent decades there has been an increasing interest in the psychology of music, music education, musicology and music philosophy, with publications of books such as *The Musical Mind* (Sloboda, 1985); *Sound and Structure* (Paynter, 1992); *Music Education: Trends and Issues* (Plummeridge (ed.), 1996); *The Practice of Performance: Studies in Musical Interpretation* (Rink (ed.), 1995); *The Social Psychology of Music* (Hargreaves and North (eds), 1997); *Music in the Moment* (Levinson, 1997); *Music and the Emotions* (Juslin and Sloboda (eds), 2002) and *Musical Identities* (Macdonald et al (eds), 2002); *Musical Performance: A Guide to Understanding* (Rink (ed.), 2002); *The Science and Psychology of Music Performance* (Parncutt and McPherson (eds), 2002). For the most part, these books have been heavily discipline-based. The psychology books, in particular, have largely ignored what practical benefits research can bring to the practical musician. Practical musicians of all descriptions are serious about their profession and are constantly looking for ways and means of assessing their own practices, thus the time seemed ripe for an academic book which is of direct relevance to the music practitioner. The explicit aim of this book is to engage music practitioners and demonstrate the many potential links between research and practice.

The book comprises 25 chapters in which research largely from the academic area of music psychology brings a range of practical questions into focus. In the context of this book, research might be regarded as critical, systematic enquiry into topics of specific interest. The spectrum of topics covered is deliberately broad, with issues ranging from historical performance practice to career choice amongst music graduates. A central concern in this brief introduction is to suggest ways in which the reader may dip in and out of the book. It is suggested that three different aspects become the central focus.

The first aspect to consider is that research questions themselves are of interest, and the findings of each chapter provide a useful source of information. For instance, Anna-Karin Gullberg and Sture Brändström (Part 3, Chapter 13) demonstrate that rock musicians trained in music college compose works that are very different in style and form from those rock musicians who learn in informal contexts, and that listeners with different degrees of formal music education appreciate these different styles of composition in different manners.

The second aspect to contemplate is that research findings can have direct educational or general implications which in all cases the authors in this book

highlight. In the rock musician chapter, for instance, critical questions for educators include: what happens to a musical genre like rock music when it is taught at a formal learning institution? What are the specific factors that are influential in the individual development of the musician?

The third relevant aspect to be considered is that the research methodologies applied to specific questions in each chapter may have broader applications which may be of interest to a reader wanting to undertake research him- or herself. For instance, Daniela Coimbra and Jane Davidson (Part 4, Chapter 16) describe a large-scale study in which they designed questionnaires requiring quantitative and qualitative analysis. In the former case, this involved them in asking participants specific questions, usually requiring forced-choice answers. From these questions it was possible for them to calculate statistical interpretations of the responses, such as how many of the participants had a particular behaviour, or which of the participants was rated as being better than the others. Thus, the frequency and/or the likelihood of a behaviour being the product of change or some critical variable could be assessed. Qualitative responses can also be quantified and statistical information extrapolated, but the principal advantage of qualitative data is that participants can be asked open-ended conversational-style questions so that they can determine the interview content themselves, with themes of relevance to them being pursued. The qualitative data generated by Daniela and Jane were richly informative, allowing insights into individual behaviour. Thus, the methodologies are juxtaposed yet seen as complementary. In principle, the difference in the two approaches is that the quantitative data provide information that is generalizable to the group of participants studied, whereas qualitative data provide data about an individual. In summary, the current volume is not focused on explaining the methodological principles of research techniques, but the chapters included in the book contain many different styles of research, and thus show the reader the broad range of approaches that can be adopted.

The book is divided into five main parts. In Part 1, different ways in which practitioners can use research is explored by authors who are all both performing musicians and researchers. Aaron Williamon and Sam Thompson are both researchers at the Centre for the Study of Music Performance at the Royal College of Music, London, where they specialize in teaching and researching performance from a psychological perspective. Their chapter defines the ways in which psychological techniques and findings can be applied to the practitioner's work. Kacper Miklaszewski from the recording company DUX in Warsaw is also a music psychologist, and is particularly focused on suggesting ways in which instrumental teachers might benefit from this kind of research knowledge.

John Rink is a pianist and Professor of Musicology at Royal Holloway, University of London, and contributes Chapter 4 of the book. His research over the years has provided critical insights into matters of interpretation, focusing principally on the piano repertoire of Chopin. A central concern for him at the

moment is that it may be possible to identify a specific research domain that concerns itself centrally with ‘performance studies’ and he draws the reader’s attention to the elements that such a domain might include. The thrust of the chapter is to suggest that rather than being a specialist single domain, ‘performance studies’ should integrate historical, theoretical and psychological work in order to provide the performer with a many-toned palette on which to construct his/her own interpretation of a work. Rink gives an exciting exposé of his ideas in the presentation of a case study of Chopin’s E minor Prelude Op. 28 No. 4.

Kari Kurkela, Director of Research at the Sibelius Academy in Helsinki, makes a case study of the courses on offer at his institution as an example of how practitioners can be trained to undertake relevant and focused research. Initially, he points out that music colleges and conservatoires are ideal locations to investigate practical music. A key feature of this chapter is that he discusses research data that rely on the opinions of the students. In other words, the students provide data about the strengths and weaknesses of their learning environment. Thus, a feature of the chapter concerns what elements of the musician’s education in this institution can be improved upon to advance them as player-researchers. In summary, this first part of the book looks at ways in which practitioners might draw on research to assist their practice, and it also considers ways in which practitioners might train to become systematic researchers.

In Part 2, research approaches that are largely focused around perception and cognition are explored from very different perspectives. Andrzej Rakowski of the Chopin Academy in Warsaw opens the section (Chapter 6) examining how the performer and listener can help the psycho-acoustician to understand how mental operations in perceiving musical pitches might occur. In the following chapter, Peter Johnson from Birmingham Conservatoire presents a highly focused research question about expressive intonation in string quartet playing: What does ‘good intonation’ in this context imply? This is both an important practical and theoretical issue. He discusses an investigation which analyses professional recordings of Beethoven’s String Quartet Op. 135 using the technique of Fourier analysis adopted from physics. In Chapter 8, Bernhard Billeter also enquires into tuning, but from a historical perspective by looking at compositions from the fifteenth to eighteenth centuries. Billeter, from the University of Zurich, notes that there were many difficulties facing musicians at that time and that issues of tuning may well have had an impact on compositional approaches. So, again, his research has significant implications for performers concerned with tuning authenticity. He poses specific questions about tuning related to Bach’s use of ‘well-tempered’ keyboards.

Richard Parncutt of the University of Graz in Austria offers another perspective on musical understanding in Chapter 9, proposing how computer-based teaching might enrich music theory learning. Although speaking about a hypothetical

curriculum, Parncutt discusses which elements of music theory can be best explored via these means. Part 2 closes with George Papadelis and George Papanikolaou of the Aristotle University of Thessaloniki investigating how the rhythm categories of a piece of music are perceived. They report a detailed study in which participants were taken through a series of rhythm identification and discrimination tasks in order to explore what mental operations were occurring for perception of the rhythmical categories to occur.

Part 3 of the book demonstrates how practitioners have explored their everyday work. Jane Davidson of the University of Sheffield, for instance, is an active opera director and she uses her work – a production of Purcell's *Dido and Aeneas* – as an opportunity to assess how the creative process operates. Thus, she turns her regular working practice into a research exercise. Jane Ginsborg from Leeds Metropolitan University is a singer, and as such was intrigued to explore how singers approached the memorization of words and music in a song. Adopting a highly systematic approach she is able to investigate not only what strategies people adopt, but which ones seem more useful. The implications of such a research approach for teaching are obvious. As discussed in the opening of this Introduction, Anna-Karin Gullberg and Sture Brändström from Luleå University in Sweden look at how rock musicians learn, with the implications of the research being highly significant: innovation largely happens in non-formal learning contexts, whereas those rock musicians who are formally taught in music college produce less creative works. Again working in a music college, Allan Vurma and Jaan Ross from Estonia (Chapter 14) use objective spectrographic analyses of singer's tones to investigate what a vocal training actually does for a voice over the course of a vocal training ranging from one to ten years. The major implications of this systematic enquiry are obvious, for it is demonstrated that the singer's formant (the voice's spectrum) increases with training, but that timbral qualities of the voices are not altered by training. These results present a conundrum for teachers when singers are often evaluated in terms of their vocal timbres.

Part 4 of the book presents research which has focused on how being a musician impacts on an individual's sense of self and how others perceive them. In Chapter 15, António Salgado from the Universidade of Aveiro in Portugal considers the issue of self-identity for opera singers. The research question is of critical importance because of the strong personal identification between musical instrument (the singer's own voice) and their sense of self (who they are as a performer). The research technique adopted is in-depth qualitative interviewing which shows how rich such data can be. Daniela Coimbra and Jane Davidson of the University of Sheffield present the findings of a large-scale investigation of how young opera singers are evaluated in a music college setting in Chapter 16. Their largely exploratory approach reveals intriguing results: singers are principally evaluated in terms of attractiveness and presentation of 'a performing personality', rather than in terms of their vocal characteristics. Evident contrasts

and parallels can be drawn between the findings of Chapters 14, 15 and 16 and should stimulate personal reflection for the reader in the contradictory and unexpected findings these systematic enquiries produce.

In Chapter 17, Stephanie Pitts of the University of Sheffield investigates the life transition of music students from school to university. Not only does her study demonstrate how to undertake detailed qualitative enquiry, this kind of research also shows that a gulf exists between what school and universities know and understand of their students. Working in the same university as Stephanie Pitts, Karen Burland and Jane Davidson consider a larger time-scale life transition, that from school to professional musician life. In an eight-year longitudinal study they demonstrate that key environmental factors seem to discriminate out those students who will go on to a professional performing career as opposed to those who will either give up music altogether or keep it as an amateur interest. Although their study is exploratory, requiring further data to validate their findings, it does demonstrate the power of research in pinpointing factors that may contribute towards a particular outcome. Part 4 of the book closes with Daina Langner of the University of Paderborn exploring what personality characteristics are displayed by musicians, and in particular what differences exist between a soloist and a group player. She makes some intriguing points concerning training and the selection procedures for various roles within the current music profession.

In Part 5, innovative research methodologies are used to illustrate that creative researchers can find ways of enquiry which provide new types of data for analysis and interpretation. In Chapter 20, computer-based research is discussed as a means of reducing the researcher's cultural biases in the assessment of phenomena in the experimental context. The topic is children's singing and the research is undertaken by Stefanie Stadler Elmer and Franz-Josef Elmer from Switzerland. Ingrid Maria Hanken of the Norwegian State Academy of Music raises important issues in Chapter 21 about how to undertake research that is both useful and 'acceptable'. Working in collaboration with her students, she looks at how student evaluation can be developed as a means of improving the quality of instrumental teaching. Similarly working alongside individuals, Nicholas Bannen from the University of Reading examines a method for teaching general musicianship. The particular emphasis of the chapter is on the action research method used. In this technique, a spiral of cycles of planning, acting, observing and reflecting are put into operation. This means that the devising of a general musicianship syllabus becomes an act of research, and so again the appropriateness of the methodological approach for the teacher/practitioner is to be emphasized. In Chapter 23, Heiner Gembris of the University of Paderborn in Germany discusses how a longitudinal study was devised and analysed, and, most importantly, discusses the findings which examine what music graduates go on to do in their future lives. The section closes with a provocative chapter by Matthew Lavy of the University of Cambridge in which he notes that existing

studies can only take us only so far in our explanations of phenomena. He considers how music elicits emotional responses in us and suggests the extent to which we can explain this through empirical enquiry.

We close the book with a final note from Jerrold Levinson of the University of Maryland. This chapter is juxtaposed next to Matthew Lavy's work as it also looks at emotional response, but we use it to conclude the book, for it tackles the most over-arching question of all: What makes music affect us as it does? The writing allows the reader to reflect on empirical work and philosophical induction and what each approach can offer. More specifically, it engages us in the debate of how something experienced as essentially physiological (tingles down the spine, for instance) can have an aesthetic value which may be regarded as a refined and culturally determined cognitive act. So, in the end we are reminded of the objective and subjective elements which need to be considered in order for critical insight to be gained.

Looking over the broad range of work contained in these 25 chapters, we know that this book will provide the reader with an engaging and important exploration of music research relevant to the music practitioner and demonstrate several different empirical approaches to collecting and analysing data. Readers are encouraged to take from it as much as possible and apply its theories and methods and results to their own everyday musical concerns. We hope the reading and reflecting is enjoyed by all!

## References

- Hargreaves, D.J. and North, A.C. (eds) (1997) *The Social Psychology of Music*, Oxford: Oxford University Press.
- Juslin, P. and Sloboda, J.A. (2002) *Music and the Emotions*, Oxford: Oxford University Press.
- Levinson, J. (1997) *Music in the Moment*, Cornell: Cornell University Press.
- Macdonald, R., Miell, D. and Hargreaves, D.J. (eds) (2002) *Musical Identities*, Oxford: Oxford University Press.
- Parncutt, R. and McPherson, G.E. (eds) (2002) *The Science and Psychology of Music Performance*, Oxford: Oxford University Press.
- Paynter, J. (1992) *Sound and Structure*, Cambridge: Cambridge University Press.
- Plummeridge, C. (ed.) (1996) *Music Education: Trends and Issues*, London: Institute of Education Press.
- Rink, J. (ed.) (1995) *The Practice of Performance: Studies in Musical Interpretation*, Cambridge: Cambridge University Press.
- Rink, J. (ed.) (2002) *Musical Performance: A Guide to Understanding*, Cambridge: Cambridge University Press.
- Sloboda, J.A. (1985) *The Musical Mind*, Oxford: Clarendon Press.

PART 1

The Practitioner and Research



**Taylor & Francis**

Taylor & Francis Group

<http://taylorandfrancis.com>

## Chapter 2

# Psychology and the Music Practitioner

Aaron Williamon and Sam Thompson

As a seemingly universal human behaviour, the practice of making and listening to music has long been the subject of psychological enquiry (see, for example, Seashore, 1910, 1912, 1919; Bartholomew, 1934). The accomplished music practitioner displays a wide range of ‘psychological’ skills that are of interest to psychologists working within a number of different subdisciplines. Perhaps as a result of music’s multifaceted nature, however, it is only over the last 30 years or so that psychology of music has emerged as a unified field of study, with the appearance of four discipline-specific journals (*Psychology of Music* in 1973, *Psychomusicology* in 1982, *Music Perception* in 1983 and *Musicae Scientiae* in 1997) and a host of international societies spanning several continents.

In this chapter we aim to highlight reasons for, and benefits of, this emergent unification and to demonstrate how practitioners can potentially use the methods of modern psychology to further their understanding of the mental and physical demands of music practice and performance. We do so, first, by placing music psychology in context, providing a general overview of psychology and some of its methodological limitations. Second, we explore why psychologists are interested in music and why music practitioners might be interested in psychology. Finally, we detail two ways in which psychologists have investigated music practice and performance – namely, by systematically *observing* musicians as they practise and perform and by *asking* them about their experiences. By doing so we hope to encourage music practitioners to explore the possibilities of employing these methods for themselves.

### **Psychology: An Overview**

Psychology, broadly defined, is the study of the mind and behaviour of humans and other animals (Valentine, 1992). From such a broad definition, one can easily conjure an assorted list of issues that qualify as the subject of psychological research. Indeed, psychologists themselves have carved the domain into a number of diverse subdisciplines, ranging from the study of long-term memory to the treatment of disordered behaviour to the analysis of attitudes and interpersonal

relations (see texts by Seamon and Kenrick, 1992 and Butler and McManus, 1995, for introductory reviews).

Aside from the common goal of understanding the mind and behaviour, these seemingly disparate subdisciplines of modern psychology are bound together – to varying degrees – by science. Strictly, science means ‘knowledge’, but it has come to mean (at least in the modern western world) knowledge acquired as a result of employing empirical methods. Empiricism requires that information be verifiable through experience, as opposed to being generated merely through a priori reasoning. That is, ‘it must be possible for different individuals in different places at different times using a similar method to produce the same results’ (Ray, 1993, p. 9).

Empiricism typically involves observation, measurement and experimentation. The possibility of applying these procedures to psychological subject matter has been questioned by many (for example, Kant, 1974[1781]; Wundt, 1862). *Observation*, for instance, has been deemed problematic for psychology because much of what is of interest (thoughts and feelings) is not open to direct observation. Hence, almost all psychological statements must be inferred. Inference is, in fact, required of all sciences, but the gap between data and theory is arguably greater in psychology than in many others (Valentine, 1992). Also, it is now clear from years of research across scientific disciplines that neither the observer nor the observed are passive, non-interactive entities in the experimental situation. This is of particular relevance in psychology, where the experiment itself is a social situation.

*Measurement* also presents difficulties for psychological research. The late nineteenth century witnessed an increase in attempts to measure such factors as intellectual ability. In some cases, this was carried out by assigning individuals scores on constructed scales, such as that for IQ (Intelligence Quotient; see Binet and Simon, 1905; Terman and Merrill, 1972). Researchers in this area have been able to achieve standardization (by delivering tests under uniform conditions to comparable groups of people), reliability (by establishing consistency of results from the same test) and concurrent and predictive validity (that is, agreement between different types of tests given at the same time, and between test scores and other measures of academic success or capability). However, even after a century of progressive research in this area, a large degree of uncertainty still remains as to what the precise values on such scales actually mean, since not all test-makers agree on a single theory or definition of intelligence (Cronbach, 1984).

Finally, *experimentation* harbours some challenges for psychological research. Although empirical investigations of social phenomena and situations are possible, difficulties inevitably emerge in proving that one specific aspect of a situation caused another. Isolating or achieving sufficient control over such aspects can be impossible for a variety of reasons, including the number of factors affecting the situation, how those factors interact and the history of the variables involved.

Moreover, practical and ethical considerations limit the extent to which control can be achieved. Researchers cannot create deprived environments or brain damage in order to study certain behaviours or cognitive processes (Valentine, 1992).

The difficulties with observation, measurement and experimentation are virtually inevitable in psychology. As Valentine (1992) concludes, however, 'psychology does have particular problems but generally these represent differences in degree rather than kind from those of other sciences. Most are capable of resolution to a greater or lesser extent' (p. 7).

## **Psychology and Music**

Like language, some recognizable form of music has been observed in all known human societies (Blacking, 1995). Moreover, it has often served a functional status within society (particularly in less developed cultures) as, for example, an adjunct to religious ceremony, a part of celebration or a preparation for battle.

In the modern western world, a day without music is virtually unknown. When people are asked to list their hobbies and interests, some sort of musical enthusiasm is usually acknowledged, making it the most popular of all avocations (Coslin, 1980; Roe, 1985). One study of university students reported that 28 per cent listened to music for over five hours per day (Toohey, 1982). Music even features as prominently as family and sex amongst individuals' primary values, and it usually rates higher than religion, sport and travel (Cameron and Fleming, 1975). 'Passive' music consumption, such as exposure to music while shopping, is another (some would say regrettable) feature of modern life. Although one may only just be aware of the presence of such music, its effects can be powerful. Recent studies have demonstrated that different genres of so-called 'muzak' can play a significant role in consumer behaviour, even to the extent of influencing purchase intentions (North and Hargreaves, 1998; North et al., 1999).

Given the extraordinary hold music appears to have over us, both consciously and subliminally, it is no surprise that psychologists have devoted considerable time to investigating the relationship between music and the mind. Moreover, the knowledge gained through studying exceptional musical performances can serve to redefine the upper limits of human achievement and provide advice to novices on how to acquire specialized skills (Staszewski, 1988).

Likewise, modern psychology has much to offer musicians. According to Wilson (1994), it can:

1. help explain the instinctual origins of the impulse to make music;
2. examine the relationship between a performer and his/her audience, including social processes such as identification, charisma, idolization and group facilitation;

3. describe the ways in which ideas and emotions are transmitted to an audience by non-verbal processes such as posture and facial expression;
4. test theories about the power of music to influence our ideas and emotions;
5. tell us what kind of people are attracted to performing and why, and the particular stresses they are subject to when doing so; and
6. suggest how optimum performance can be achieved and how such conditions as stage fright and memory lapses can be managed.

To what extent has psychology, to date, provided information on these processes? In *The Musical Mind* (1985), Sloboda suggested that research in music psychology offers considerable knowledge in some of these areas but admitted that there were a number of issues of great importance to musicians that had been left relatively unexplored. He proposed several reasons for this. First, some psychologists studying music have not received extended musical training and so have a limited range of musical insights and intuition to guide their work. Second, theoretical developments in psychology of music have been slow, with researchers tending to construct micro-theories to account for their own results and failing to synthesize research findings from different sources. Third, psychological research is ‘dominated by the view that one must understand the most peripheral and simple aspects of intellectual functioning as a prelude to the study of more central and complex aspects’; therefore, the study of topics that are of the most direct relevance to musicians – such as ‘large-scale musical structure, performance, and composition’ – has been limited (p. v). Fourth, writers in music psychology have tended to address themselves exclusively either to professional psychologists or to music educators and educational researchers.

Sloboda, however, writes optimistically about the emerging state of affairs in psychology of music, noting that researchers well grounded in both psychology and music have ‘begun to construct psychologically interesting theories of musical functioning which might be capable of unifying and giving direction to a wide range of research endeavours’ (p. v). We would argue that, since the publication of *The Musical Mind* in 1985, research in music psychology has indeed provided better theoretical and pedagogical understanding of many issues within music and that the potential for further growth is perhaps now greater than ever (see Williamon, 2004, for examples and further discussion).

One reason for this is the increasing interest in performance-related research, which has brought with it an influx of researchers with first-hand, practical experience of music-making. We see this experience as an essential element in establishing beneficial collaborative ventures between various types of psychologists and musicians and a rich source for practical, hypothesis-driven research initiatives. A second reason is that the mutual suspicion between the musicological and psychological communities, as discussed by Cook (1994), has largely dissipated as both camps have come to better understand and respect each other’s positions. Finally, increased interest in, and awareness of, research in music psychology has