Dr. WILL HOWIE

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EDUCATION

2018 **Doctor of Philosophy, Sound Recording**
McGill University, Montreal
Thesis Title: "Capturing Orchestral Music for Three-Dimensional Audio Playback"
Supervisors: Prof. Richard King, Prof. Wieslaw Woszczyk

2008 **Masters of Music, Sound Recording**
McGill University, Montreal

2004 **Bachelors of Music, Secondary Education**
University of British Columbia, Vancouver

PROFESSIONAL EXPERIENCE

2006 - Present **Audio Engineer | Music Producer | Consultant**, Vancouver, Montreal
• Producing, recording, editing, mixing, and mastering stereo and multichannel audio content for commercial release, streaming, and live performance. Immersive audio research and publication. Consultant for audio and acoustics installation and optimization.

2026 - Present **Associate Producer/Technician (casual)**, CBC/Radio-Canada, Vancouver
• On-air audio mixing and editing, music supervision, post production and sound design.

2023 - Present **Recording Engineer (casual)**, CBC, Vancouver
2018 - 2021, 2011 - 2014 • Recording, editing, mixing, and mastering content for national broadcast/distribution on CBC Radio, CBC Television, and CBC Podcasts. Live concert PA and monitor mixing. Employee training; audio solutions research.

2019 **Director, Research and Audio**, Audible Reality, Vancouver
•Director of research for binaural and loudspeaker-based immersive audio software applications; Director of immersive audio production and acoustic measurements.

2009 - 2014 **Assistant Head Technician**, Chan Centre for the Performing Arts, Vancouver
• Front of house and monitor mixing for major international touring artists; venue acoustics, PA, and monitor system tuning; archival recording; equipment maintenance.

2008-2009, 2007 **Senior Audio Associate** – The Banff Centre, Banff
• Recording, mixing, editing, and mastering commercial releases, studio sessions, demos and live concerts; production and post-production audio for short films; teaching studio orientation classes; live sound reinforcement.

2007 - 2008 **Concert Recording and Live Sound Coordinator** – Schulich School of Music, McGill University, Montreal
• Scheduled concert recordings and live sound, FOH/monitors/recording engineer, trained engineers, completed payroll documents.

2005 - 2008 **Sound Engineer** – Schulich School of Music, McGill University, Montreal
• Recording, mixing, editing, and mastering live concerts, student and faculty recordings, and live sound reinforcement.

GRANTS and AWARDS

2025	Canada Council for the Arts Concept to Realization Grant
2021-2023	FY2021 JSPS Postdoctoral Fellowship for Research in Japan (Japan Society for the Promotion of Science)
2015 - 2018	Joseph-Armand Bombardier Canada Graduate Scholarship (Social Sciences and Humanities Research Council)
2017	International Graduate Mobility Award (McGill University)
2015	Graduate Research Enhancement and Travel Award (McGill University)
2015 - 2017	CIRMMT Student Travel Award *x 3* (Centre for Interdisciplinary Research in Music Media and Technology)
2014 - 2015	Graduate Excellence Fellowship (McGill University)
2014	King Graduate Award (McGill University)
2009	Canadian Academy of Recording Arts and Sciences Fred Sherratt Award

ACADEMIC APPOINTMENTS and TEACHING EXPERIENCE

2026 - 2027 **Music Production** & **Engineering Mentor**, Humber Polytechnic, Toronto (remote)
•Mentoring Music Production and Engineering graduate certificate students

2025 - 2026 **Sessional Lecturer**, University of British Columbia, Vancouver
• Course Title: Music Technology Capstone Project (Fall)
• Supervision of student(s) capstone project(s) for minor in Applied Music Technology

• Course Title: Introduction to Music Technology (Winter)
• Teaching and updating undergraduate survey course on topics related to music technology, sound, hearing and auditory perception

2024 - 2026 **Sessional Lecturer**, University of British Columbia, Vancouver
• Course Title: Introduction to Electroacoustic Music (Fall)
• Teaching and updating undergraduate course covering technical, compositional, and historical aspects of electroacoustic music creation and performance
•Optimization of Computer Music Studio multichannel audio facilities

2023 **Course Instructor**, Tokyo University of the Arts, Tokyo
• Course Title: Music Production Seminar/録音スタジオ制作研究 (Spring)
• Developed and taught curriculum for weekly seminar for undergraduate and graduate students covering a broad range of topics related to music production

2021 **Guest Lecturer**, University of British Columbia, Vancouver
• Designed and taught multi-day workshop on acoustic music recording and production

2018, 2019, 2025 **Invited Faculty**, Banff Centre for Arts and Creativity, Banff
• Directed annual multi-day intensive workshop on immersive audio production

2018 **Course Instructor**, McGill University, Montreal
• Course Title: Audio Production Essentials (Winter)
• Co-developed and taught undergraduate survey course on audio production

2017 – 2018 **Course Instructor**, McGill University, Montreal
• Course Title: Introduction to Sound Recording (Fall/Winter)
• Co-teaching undergraduate practical classes and lectures on various aspects of sound recording and reproduction, evaluation of students' recorded work

2014 – 2017 **Course Instructor**, McGill University, Montreal
• Course Title: Digital/Analog Editing (Fall)
• Developed curriculum, instructed and assessed students for graduate level course in analog and digital music editing

2015 **Teaching Assistant**, McGill University, Montreal
• Course Title: Introduction to Electroacoustics (Winter)
• Graded lab reports and met with students to discuss results

2014 – 2015 **Teaching Assistant**, McGill University, Montreal
• Course Title: Webcasting Coordinator/Recording Engineer (Fall/Winter)
• Directed team of audio and video technicians in the production of live broadcasts of Schulich School of Music concerts
•Attended production meetings, researched aspects of content live streaming

ACADEMIC RESEARCH EXPERIENCE

2021-2023 **Postdoctoral Research Fellow**, Japan Society for the Promotion of Science, Tokyo University of the Arts, Tokyo
•Investigating perceptual and physical effects of lower-elevated sound in 3D audio reproduction; developing novel 3D sound capture methods
•Research Host: Prof. Toru Kamekawa

2019, 2017 **Invited Researcher**, Tokyo University of the Arts, Tokyo
• Investigating perceptual differences between immersive sound capture techniques

2014 - 2018 **Doctoral Student**, McGill University, Montreal
• Developing and evaluating sound capture methods for three-dimensional audio reproduction systems, focusing on music recording and mixing
• Investigating perceptual differences between 3D audio reproduction formats
• Investigating listener training for evaluation of 3D audio reproduction

2010 – 2012 **Field Assistant for Doctoral Researcher**, Simon Fraser University, Burnaby
• Soil coring, hydrological measurements, hydrochemical measurements, vegetation inventory

2010 **Research Assistant**, McGill University, Montreal
• Assisting in the capture of high resolution multichannel impulse responses of various acoustic spaces in Vancouver, Canada
• Supervisor: Prof. Wieslaw Woszczyk

2006 **Research Assistant**, McGill University, Montreal
• Maintaining and testing audio for high resolution video link between McGill University and University of British Columbia
• Supervisor: Prof. Wieslaw Woszczyk

PUBLICATIONS

Publications in peer-reviewed journals:

W. Howie, D. Martin, A. Marui, T. Kamekawa, S. Kim, A. Aydin, R. King, "Perceptual comparison of 3D audio reproduction with and without bottom channels," *J. Audio Eng. Soc.*, Vol. 72, No. 4, 2024.

S. Kim, W. Howie, "Influence of the listening environment on recognition of immersive reproduction of orchestral music sound scenes," *J. Audio Eng. Soc.*, Vol. 69, No. 11, 2021.

W. Howie, D. Martin, S. Kim, T. Kamekawa, R. King, "Effect of skill level on listener performance in 3D audio evaluation," *J. Audio Eng. Soc.*, Vol. 68, No. 9, 2020.

W. Howie, D. Martin, S. Kim, T. Kamekawa, R. King, "Effect of audio production experience, musical training, and age on listener performance in 3D audio evaluation," *J. Audio Eng. Soc.,* Vol. 67, no. 10, 2019.

W. Howie, R. King, D. Martin, "Listener Discrimination Between Common Speaker-Based 3D Audio Reproduction Formats," *J. Audio Eng. Soc.*, Vol. 65, No. 10, 2017.

Publications in editor-reviewed journals:

R. King, B. Leonard, W. Howie, J. Kelly, "Real Rooms vs Artificial Reverberation: An evaluation of actual source audio vs. artificial ambience," *Proceedings on Musical Acoustics*, Vol. 29, No. 1, 2016.

Publications in conference proceedings:

N. Brochec, T. Tanaka, W. Howie, "Microphone-based Data Augmentation for Automatic Recognition of Instrumental Playing Techniques," in *International Computer Music Conference*, Seoul, South Korea, 2024. ⟨hal-04642673⟩

S. Kim, D. Ko, W. Howie, "Validation of a Neural Network Clustering Model for Affective Response to Immersive Music," in *AES Convention 155*, New York, 2023.

S. Kim, W. Howie, "Neural-network clustering for evaluating immersive sound fields," in *inter-noise 2023*, Chiba, 2023.

W. Howie, T. Kamekawa, M. Morinaga, "Case Studies in Music Production for 3D Audio Reproduction with Bottom Channels," in *AES International Conference on Spatial & Immersive Audio*, Huddersfield, 2023.

T. Kamekawa, A. Marui, W. Howie, "The effect of head tilt on the perception of the top layer of three-dimensional audio," in *AES International Conference on Spatial & Immersive Audio*, Huddersfield, 2023.

W. Howie, A. Marui, T. Kamekawa, F. Grond, A. Omoto, "Objective comparison of 3D audio reproduction with and without bottom channels," in *AES International Conference on Spatial & Immersive Audio*, Huddersfield, 2023.

E. Ekici, W. Howie, T. Kamekawa, "Field Report on 3D Audio Capture of Solo Piano for Classical Music Productions," in *13th International Hisarli Ahmet Symposium*, Kütahya, 2023.

W. Howie, D. Martin, T. Kamekawa, J. Kelly, R. King, "Comparing immersive sound capture techniques optimized for acoustic music recording through binaural reproduction," in *AES Convention 150*, Online, 2021.

W. Howie, "Pop and Rock music audio production for 22.2 Multichannel Sound: A Case Study," in *AES Convention 146*, Dublin, 2019.

W. Howie, D. Martin, D. Benson, J. Kelly, R. King, "Subjective and objective evaluation of 9ch three-dimensional acoustic music recording techniques," in *AES International Conference on Spatial Audio*, Tokyo, 2018.

S. Kim, W. Howie, D. Martin, "Comparison of Salient Percepts Associated With Three Sound-Field Capturing Methods," in *ICSV25*, Hiroshima, 2018.

R. King, B, Leonard, W. Howie, J. Kelly, "Real or Illusion? A comparative study of captured ambience vs. artificial reverberation in immersive audio applications," in *AES Convention 142*, Berlin, 2017.

W. Howie, R. King, D. Martin, F. Grond, "Subjective Evaluation of Orchestral Music Recording Techniques for Three-Dimensional Audio," in *AES Convention* 142, Berlin, 2017.

M. Boerum, B. Martin, R. King, G. Massenburg, D. Benson, W. Howie. "Lateral Listener Movement on the Horizontal Plane: Sensing Motion Through Binaural Simulation," in *AES 61st International Convention*, London, 2016.

W. Howie, R. King, D. Martin, "A Three-Dimensional Orchestral Music Recording Technique, Optimized for 22.2 Multichannel Sound," in *AES Convention 141*, Los Angeles, 2016.

R. King, W. Howie, J. Kelly, "A Survey of Suggested Techniques for Height Channel Capture in Multi-channel Recording," in *AES Convention 140*, Paris, 2016

W. Howie, R. King, M. Boerum, D. Benson, A. Han, "Listener preferences for height channel microphone polar patterns in three-dimensional recording," in *AES Convention 139*, New York, 2015.

B. Martin, R. King, B. Leonard, D. Benson, W. Howie, "Immersive content in three-dimensional recording techniques for single instruments in popular music," in *AES Convention 138*, Warsaw, 2015.

W. Howie and R. King, "Exploratory microphone techniques for three-dimensional classical music recording," in *AES Convention 138*, Warsaw, 2015.

SELECTED ARTISTIC OUTPUT/PERSONAL DISCOGRAPHY

2025/26 "Unrealistic Spaces" (w/ Sam Davidson and Yujin Honda) – 3D electroacoustic music, 12 channels
2022 "Mercury Light" – experimental 3D pop/rock, 27 channels
2018 "Working" – experimental 3D pop/rock, 22 channels
2015 "Supermoon" – experimental 3D pop/rock, 22 channels
2013 "Restless" (w/ aalt): alternative pop, stereo
2009 "Explosive Secret Meeting" (w/ aalt): alternative pop, stereo
2008 "Normy, Volume 1" (as Wilberforce 2167): sample-based electronic music "mixtape"
2003 "Heavy Air" – amplified tenor saxophone and live signal processing (mono)
2003 "Black Math Trio" (w/ Black Math Trio) – jazz fusion, stereo
1998 "Getting to Know You" (w/Scrambled Swan): experimental/electronic/ lo-fi album

INVITED PRESENTATIONS and LECTURES

2025 "Unrealistic Spaces: 3D electroacoustic music recording demo," The Centre for Interdisciplinary Research in Music Media and Technology, Montreal, November 11, 2025, 1.5 hours.

"Techniques for Three-Dimensional Music Capture and Creation," University of Music and Performing Arts Vienna, Vienna, October 21, 2025, 2 hours.

2023 "Workshop: Mix Reviews," and "Lecture: An Approach to Music Recording for 3D Audio Reproduction," University of Victoria, Victoria, November 22, 2023, 3 hours.

"Workshop on Drum Recording," Tokyo University of the Arts, Tokyo, October 17, 2023, all day.

"Case Studies in Music Production for 3D Audio Systems with Bottom Channels," AES International Conference on Spatial and Immersive Audio, Huddersfield, August 2023, 90 minutes.

"An Approach to Music Recording for Large-Scale 3D Audio Reproduction," Korean Advanced Institute of Science and Technology, Daejeon, April 2023, 90 minutes.

"Workshop on 3D Audio Research," Tokyo University of the Arts, Tokyo, March 2023, 2 Days.

2022 "Audio: Science in Service of Art," Hibiya High School, Tokyo, November 2022, 90 minutes.

"3D Music Production," McGill University, Montreal, October 2022, 180 minutes.

"Immersive Music Recording and Mixing Case Studies," Tokyo University of the Arts, Tokyo, July 2022, 120 minutes (x 2).

2020 "Case Studies in 3D Music Production," McGill University, Montreal, October 2020, 180 minutes.

"Podcast Audio," CBC/Radio-Canada, Vancouver, February 2020, 60 minutes.

2019 "Recording Pop/Rock Music for 3D Audio Production," Audio Engineering Society, Tokyo University of the Arts, Tokyo, November 2019, 90 minutes.

"Workshop on 3D Rock Music Recording for 22.2 Multichannel Sound," Tokyo University of the Arts, November 5, 2019, All Day.

"Microphones and Microphone Technique for Broadcast Audio," CBC/Radio-Canada, Vancouver, October 2019, 60 minutes.

"Case Studies in Jazz and Pop/Rock Music Production for 3D Audio," *AES Convention 146*, Dublin, March 2019, 60 minutes.

"Recording Orchestral Music and 3D Audio: Challenges, Considerations, and Solutions," (with Toru Kamekawa, Kimio Hamasaki, Alex Kosiorek, Hyunkook Lee) *AES Convention 146*, Dublin, March 2019, 90 minutes.

2018 "Techniques for recording and mixing classical, jazz, and pop/rock music for 3D audio," Department of Electrical Engineering, Simon Fraser University, Burnaby, October 2018, 25min.

"Techniques for recording and mixing pop, rock, and jazz music for 22.2 Multichannel Sound," *2018 AES International Conference on Spatial Reproduction*, Tokyo Denki University, Tokyo, August, 2018, 75 minutes.

"Microphone Techniques for 3D sound recording," (with Hyunkook Lee, Kimio Hamasaki, Helmut Wittek, Toru Kamekawa, Thorsten Weigelt, Florian Camerer) *2018 AES International Conference on Spatial Reproduction*, Tokyo Denki University, Tokyo, August, 2018, 120 minutes.

2017 "Recording for 22.2", as part of *Workshop on DSP applications in the recording studio,* Centre for Interdisciplinary Research in Music Media and Technology, McGill University, November 2017, 60 minutes.

"Immersive Audio Capture for 22.2 Multichannel Sound (updated)", Tokyo University of the Arts, Tokyo, April 2017, 60 minutes.

"Techniques for Three-Dimensional Audio Capture of Musical Performance," (with Morten Lindberg) Audio Engineering Society, McGill University, Montreal, March 2017, 45 minutes.

2016 "Immersive Audio Capture for 22.2 Multichannel Sound", Audio Engineering Society, University of British Columbia, Vancouver, August 2016, 60 minutes.

"Immersive Audio Capture for 22.2 Multichannel Sound" (with Bryan Martin), Symposium IX 3rd Edition, Society for Arts and Technology, Montreal, June 2016, 90 minutes.

"Three-Dimensional Music Recording" (with Bryan Martin), as part of *Workshop on Three-dimensional Immersive Audio*, Centre for Interdisciplinary Research in Music Media and Technology, McGill University, April 2016, 45 minutes.

"Three-dimensional recording techniques for classical, jazz, and pop/rock music," Yamaha Corporation, March 2016, 120 minutes.

"Three-dimensional recording techniques for classical, jazz, and pop/rock music," Kyushu University, March 2016, 45 minutes.

"Three-dimensional recording techniques for classical, jazz, and pop/rock music," Tokyo University of the Arts, February 2016, 100 minutes.

"Three-dimensional recording techniques for classical, jazz, and pop/rock music," NHK Science and Technical Research Laboratories, February 2016, 120 minutes.

2015 "Three-Dimensional Recording Techniques for Classical Music," Audio Engineering Society, Rochester Institute of Technology, November 30, 2015, 30 minutes

"3D recording listening and evaluation," Rochester Institute of Technology, November 30, 2015, 60 minutes

PROFESSIONAL/ACADEMIC SERVICE

Ongoing **Peer-Reviewer**, *Journal of the Audio Engineering Society* (2019), *Acoustic Science and Technology* (2019), *Audio Engineering Society Conferences*

2019 **Co-Chair**, "Recording Orchestral Music and 3D Audio: Challenges, Considerations, and Solutions," *AES Convention 146*, Dublin, March 2019.

2018 **Chair**, *Workshop on Orchestral Music in the 21st Century: Composition, Performance, Capture, and Distribution*, Centre for Interdisciplinary Research in Music Media and Technology, February 2018.

2017 **Chair**, Paper Session: "Recording and Live Sound", *AES Convention 143*, May 2017.

2015 **Chair**, *Workshop with Floyd Toole on sound reproduction*, Centre for Interdisciplinary Research in Music Media and Technology, April 2015

2014 - 2015 **Secretary**, AES 59th Conference on Sound Reinforcement Engineering and Technology, Organizing Committee

AFFILIATIONS Audio Engineering Society
Japan Society for Sonic Arts

LANGUAGES English: native
French: fluent
Japanese: functional

REGISTERED INVENTIONS

Howie, William. 2016. Three-Dimensional Music Recording System. McGill Report of Invention #16123. Disclosed June 4th, 2016.