

Curriculum Vitae

JAMSHED BHARUCHA

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The Cooper Union
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EDUCATION

Harvard University, Ph.D., Psychology, 1983
Yale University, M.A., Philosophy, 1979
Vassar College, B.A., General and Departmental Honors, Biopsychology, 1978
Trinity College of Music, London, Associate's Diploma in Violin Performance, 1973

ADMINISTRATIVE POSITIONS

President, The Cooper Union for the Advancement of Science and Art, 2011-
Provost & Senior Vice President, Tufts University, 2002-2011.
Dean of the Faculty of Arts & Sciences, Dartmouth College, 2001-2002.
Deputy Provost, Dartmouth College, 2000-2001.
Associate Dean of the Faculty (Social Sciences), Dartmouth College, 1997-2000.

FACULTY & VISITING APPOINTMENTS

Cooper Union

Professor, School of Humanities and Social Sciences

Tufts University

Professor, Department of Psychology (School of Arts & Sciences),
Department of Neuroscience (Sackler School of Biomedical Sciences, School
of Medicine), 2002-2011.
Department of Music (School of Arts & Sciences), 2007-2011.
Research Professor, Center of Cognitive Studies, 2002-2011.

Dartmouth College

John Wentworth Professor, 1997-2002.
Professor, Department of Psychological & Brain Sciences (orig. Psychology), 1995-2002.
Associate Professor, Department of Psychology, 1989-95.
Assistant Professor, Department of Psychology, 1983-89.
Appointments in Interdisciplinary Programs:
Program in Linguistics & Cognitive Science, 1989-2002.

Program in Electro-Acoustic Music, 1989-2002.
Program in Cognitive Neuroscience, 1991-2002.

Visiting Appointments

Research Support Technician, Department of Psychology, Cornell University, 1982-83.
Sabbatical at Carnegie-Mellon University, 1986.
Sabbatical at Stanford University, 1987.
Visiting scientist, Tata Institute for Fundamental Research, Mumbai, India, 1986.

HONORS & AWARDS

Honorary Fellow, Foreign Policy Association, 2011
Distinguished Achievement Award, Alumnae and Alumni of Vassar College, 2005
Undergraduate Teaching Initiative Special Award (given by the Student Assembly), Dartmouth College, 2002
Honorary member of the Dartmouth Class of 2002, awarded by the graduating class.
Fellow, Center for Advanced Study in the Behavioral Sciences, Stanford, CA, 1993-94.
Huntington Teaching Award, Dartmouth College, 1989.
Fellow, American Institute of Indian Studies, 1985.
Swinbourne Prize in Biology, Vassar College, 1978.
Phi Beta Kappa, 1978.

GRANTS

NIH, 1999-2004: PI on Section 4, "Brain Imaging and Auditory Cognition" (\$376,825), in program project "Program in Cognitive Neuroscience" (PI: M.S. Gazzaniga) (\$5,555,811), 2P50 NS17778-18.
National Science Foundation, 1996-2000: "Auditory Anchoring" (\$205,610), SBR-9601287.
National Science Foundation, 1993-96: "Modeling and Studies of Auditory Cognition" (\$188,782), DBS-9222358.
National Science Foundation, 1993-94: Grant toward Fellowship at Center for Advanced Study in the Behavioral Sciences, SES-9022192.
Senior Faculty Grant, Dartmouth College, 1993.
National Institute of Neurological Disorders and Stress, 1990-1993: Co-PI with M. Tramo on section "Cortical Networks in Auditory Pattern Perception" in program project "Program in Cognitive Neuroscience", NS17778.
National Science Foundation, 1989-92: "Modeling the Acquisition of Expectancies in Music" (\$100,248), BNS-8910778.
McDonnell/Pew training grant in Cognitive Neuroscience, 1989-1992: Co-PI (with M.S. Gazzaniga).
Rockefeller Center grant, Dartmouth College, 1988-90: Co-PI with David E. Jones, "Mind and Music: A Cross-Cultural Simulation".
Keck Foundation Scientific Courseware Grant, 1988: "A Neural Net Learning Simulator".
Faculty Fellowship, Dartmouth College, 1987.
Keck Foundation Scientific Courseware Grant, 1985: Co-PI with John C. Baird, "MindLab, a Macintosh Laboratory for Perception & Cognition".

BOARDS

Boston Global Bridge Institute, 2009-2011

Board of Visitors, Longy School of Music, Cambridge, MA, 2008-2011

Board of Corporators, Hallmark Health, 2006-2011

Healthcare system consisting of Lawrence Memorial Hospital and Melrose Wakefield Hospital (Finance Committee, Strategic Planning Committee, Investment Committee)

Officer, Corporation of Tufts University, 2002-2011.

President's Advisory Council, Vassar College, 2002-2007.

Advisory Board, NAMM Foundation, 2006-present.

Board of Trustees, International Foundation for Music Research, 2000-2006.

Board of Governors, University Press of New England, 2000-2001.

Board of Trustees, Vassar College, 1991-1999:

Chair, Trustee Budget & Finance Committee, 1994-1999.

Served on following Trustee Committees: Executive, Academic Affairs, College Relations, Buildings and Grounds, Audit.

Board of Directors, Society for Music Perception and Cognition, 1992-1994.

Board of Directors, Alumnae and Alumni of Vassar College, 1991-1995.

NATIONAL & REGIONAL SERVICE

Massachusetts Life Sciences Collaborative (Organizing Committee)

Eastern Massachusetts Health Care Initiative (Executive Committee)

New England Association of Schools and Colleges

Evaluation Team for accreditation of the University of Connecticut, 2007, and University of Vermont, 2009.

Expert Committee, Canada Fund for Innovation (Cognitive Neuroscience section), and Fonds de recherche sur la société et la culture, Quebec, 2006.

Advisory Panel, National Science Foundation (Program in Human Cognition & Perception), 1993-1997.

SELECTED COMMITTEES

Tufts:

Chair, Provost's Council (Deans, Vice Provost, Associate Provosts, select VP's)

Chair, Steering Committee, Clinical and Translational Science Institute (NIH CTSA grant)

Co-Chair, Task Force on Research Integration with Tufts-New England Medical Center

Budget Committee

President's Academic Council

Campaign Planning Committee

Dartmouth:

Chair, Self-Study Committee on Computing and the Information Environment

Chair, Search Committee for Treasurer/VP for Finance

Chair, Rockefeller Center Faculty Council

Chair, Social Science Divisional Council

President's Executive Committee

President's Academic Council

Committee Advisory to the President
Budget Committee
Committee on Organization and Policy
Committee on Instruction
Committee on the Faculty
Council on Libraries
Council on Sponsored Activities
Council on Computing
Faculty Affirmative Action Review Committee
Committee on Economic Status of the Faculty

EDITORIAL

Editor, *Music Perception*, 1994-1998 (Associate Editor, 1992-94; Consulting Editor, 1986-92).
Consulting Editor, *Journal of Experimental Psychology: Human Perception & Performance*, 1989-1994.
Special Action Editor, *Psychological Review*, 2001.
Advisory Board, *Applied Economics Research Bulletin*, 2007-present.
Manuscripts and grant proposals reviewed for numerous academic journals, publishers, and granting agencies.

PUBLIC COMMENTARY

World Science Festival, New York

“Music and the Spark of Spontaneity” (with John Schaefer), June 4, 2011:

http://worldsciencefestival.com/events/music_and_the_mind

“Good Vibrations: The Science of Sound” (with John Schaefer), June 3, 2010:

<http://www.worldsciencefestival.com/good-vibrations>

WNYC, New York, NY, “Behind the Universal Language”, Soundcheck (John Schaefer), June 12, 2009:

<http://mediasearch.wnyc.org/m/22490711/behind-the-universal-language-soundcheck-friday-12-june-2009.htm?q=bharucha>

World Science Festival, New York, “Notes and Neurons: In Search of the Common Chorus” (with John Schaefer, Bobby McFerrin, Daniel Levitin & Lawrence Parsons), June 12, 2009:

<http://www.worldsciencefestival.com/video/notes-neurons-full>

New England Cable News (NECN)

“Reconciliation in Iraq”. (Barbara Macleod), July 8, 2008:

<http://www.necn.com/Boston/World/The-Main-Event-Reconciliation-in-Iraq/1215570319.html>

“Iraqi Leaders Find Common Ground in Secrecy” (John Moroney), April 28, 2008:

<http://www.necn.com/Boston/World/Iraqi-leaders-find-common-ground-in-secrecy-/1209433704.html>

WVKK, Poughkeepsie, NY, “The Library Café” (Thomas Hill):

<http://library-cafe.blogspot.com/2008/02/jamshed-bharucha.html>

Public Radio International, “Grey Matters: Music and the Brain” (Mandy Patinkin), March 1998:

<https://www.mega.nu/ampp/danamusic.html>

Consulted on “MindTalk”, TV show produced by New Hampshire Council on the Humanities.

New York Times, "The Mystery of Music: How it Works in the Brain" (Sandra Blakeslee), May 16, 1995:

<http://query.nytimes.com/gst/fullpage.html?res=990CE4DC133AF935A25756C0A963958260>

US News and World Report, "The Musical Brain" (W.F. Allman), June, 1990, pp. 56-62.

PCTV (Giles Bateman, Host/Producer) demonstrating computer program DartNet for a segment on neural nets. January, 1995.

Discover Magazine, "Music of the Hemispheres" (James Shreeve). October 1, 1995:

<http://discovermagazine.com/1996/oct/musicofthehemisp895/?searchterm=bharucha>

TEACHING and ADVISING

Cooper Union: Course entitled "Cooper Union World Forum"

Tufts: Lectures in Child Development, Psychology, Music, and Cognitive Science.

Undergraduate Courses taught (at Dartmouth except where specified):

- Introductory Psychology (team taught)
- Cognition
- Thought, Memory and Language
- Experimental Study of Cognition
- Experimental Design, Methodology & Data Analysis
- Auditory Perception & Music Cognition
- Modeling Cognition with Neural Nets
- Sophomore Tutorial (Harvard, Department of Psychology)

Graduate courses taught (Dartmouth):

- Graduate Proseminar (team taught)
- Graduate Core Seminar in Perception and Cognition
- Auditory Perception and Music Cognition
- Measurement and Statistics II.

Guest lectures in courses (Dartmouth)

- "Physics of Music" (Physics Department)
- "Music & Technology" (Music Department)
- "Reason & Argument" (Philosophy Department)
- "Chance" (Mathematics Department)
- "Artificial Intelligence" (Computer Science Department)
- "Educational Psychology" (Education Department).

Undergraduate advising (Dartmouth)

- Pre-major advising
- Major advising in Department of Psychological and Brain Sciences; Program in Cognitive Science.

Graduate advising (Dartmouth)

- Department of Psychological and Brain Sciences
- Graduate Program in Electro-Acoustic Music

Graduate Program in Cognitive Neuroscience

Undergraduate honors/research and thesis committees (Dartmouth):

Curtis Snook (Harvard), Joanna Morris, Tracy Gleason, Mark Wachen, Kristine Taylor, Ian Davis, Subhobrata (Joy) Mitra, Mark McNellis, Vadim Sarma, Kristin Maczko, Laura Gibson, Benjamin Berk, Lauren Fontein, Jeffrey Birk

Graduate student supervision and thesis committees (at Dartmouth unless otherwise specified):

Paula Schnurr, Terri Lustick, Nicholas Oram (Queens University, Canada), Catherine Stevens (University of Sydney), Bernice Laden (University of Washington), Keiko Stoeckig, Timothy Hubbard, Hasan Tekman, Christopher Langmead, Damen Peterson, Einar Mencl, Jeremy Goodridge, Timothy Justus, Rebecca Pittenger, Barbara Tillmann (Université de Bourgogne), Meagan Curtis, Josh McDermott (MIT)

Postdoctoral fellows: Mark Wessinger, Barbara Tillmann, Petr Janata, Meagan Curtis.

SELECTED MUSICAL ACTIVITIES

Bombay Chamber Orchestra
Concert Master, Vassar College Orchestra
Calhoun College Orchestra, Yale University
Harvard-Radcliffe Orchestra, Harvard University
Bach Society Orchestra, Harvard University

PUBLICATIONS

Bharucha, J. (in press). Education in South Asia: Time bomb or silver bullet? In Najam, A. & Yusuf, M. (Eds.), *South Asia 2060*. Fredrick S. Pardee Center, Boston University.

Bharucha, J.J., Curtis, M.E. & Paroo, K. (in press). Musical communication as alignment of brain states. In Rebuschat, P. (Ed.), *Music and Language as Cognitive Systems*. Oxford: Oxford University Press.

Bharucha, J.J., Curtis, M.E. & Paroo, K. (in press). Alignment of brain states: Response to commentaries. In Rebuschat, P. (Ed.), *Music and Language as Cognitive Systems*. Oxford: Oxford University Press.

Curtis, M.E. & Bharucha, J.J. (2010). The minor third communicates sadness in speech, mirroring its use in music. *Emotion*, 10, 335-348.

Bharucha, J.J. (2009). The synchronization of brains. In J. Brockman (Ed.), *This Will Change Everything*. New York: Harper Perennial.
http://www.edge.org/q2009/q09_14.html#bharucha

Ambady, N. & Bharucha, J.J. (2009). Culture and the brain. *Current Directions in Psychological Science*, 18, 342-345.

Bharucha, J.J. (2009). Overlapping crises. *Inside Higher Ed*, December 10:

<http://www.insidehighered.com/views/2009/11/30/bharucha>

- Bharucha, J.J. (2009). From frequency to pitch, and from pitch class to musical key: Shared principles of learning and perception. *Connection Science*, 21, 177-192.
- Curtis, M.E. & Bharucha, J.J. (2009). Memory and musical expectation for tones in cultural context. *Music Perception*, 26, 365-375.
- Bharucha, J. (2009). Stretching your mind. In J. Brockman (Ed.), *What Have You Changed Your Mind About?* New York: Harper Collins.
http://www.edge.org/q2008/q08_16.html#bharucha
- Bharucha, J.J. & Curtis, M.E. (2008). Affective spectra, synchronization and motion: Aspects of the emotional response to music. *Behavioral and Brain Sciences*, 31, 579.
- Bharucha, J. (2008). In Helsinki, a meeting of minds. *Tufts Magazine*, XV(4), 10-11.
- Tillmann, B., Janata, P., Birk, J. & Bharucha, J.J. (2008). Tonal centers and expectancy: Facilitation or inhibition of chords at the top of the harmonic hierarchy? *Journal of Experimental Psychology: Human Perception and Performance*, 34, 1031-1043
- Bharucha, J. (2008). Cognitive dilemmas in higher education. In M.E. Devlin (Ed.), *Futures Forum 2008*. Cambridge, MA: Forum for the Future of Higher Education and NACUBO.
<http://net.educause.edu/ir/library/pdf/ff0813s.pdf>
- Bharucha, J.J. (2008). Expectation as an implicit process (Tribute to Leonard B. Meyer). *Music Perception*, 25, 477-478.
- Bharucha, J. (2008). America can teach Asia a lot about science, technology, and math. *Chronicle of Higher Education*, 54 (20), January 25, pp. A33-34.
http://www.neasc.org/downloads/PDFs/assessment_forum/Bharucha_Chronicle_Article.pdf
- Bharucha, J. (2007). The globalization of higher education. In J. Brockman (Ed.), *What Are You Optimistic About?* New York: Harper Collins.
http://edge.org/q2007/q07_9.html#bharucha
- Bharucha, J. (2007). Mind over music. A space for music. *Tufts Magazine*, XIV(2), 15-18.
- Bharucha, J. (2006). Education as we know it does not accomplish what we believe it does.
http://www.edge.org/q2006/q06_10.html#bharucha.
- Bharucha, J. (2006). Squeeze a bit more from this sponge. *Times Higher Education Supplement*, September 8, p. 4. London: TSL Education.
- Bharucha, J.J., Curtis, M. & Paroo, K. (2006). Varieties of musical experience. *Cognition*, 100, 131-172.

- Janata, P., Birk, J., Van Horn, J. D., Leman, M. Tillmann, B. & Bharucha, J. J. (2003) The cortical topography of tonal structures underlying Western music. *Science*, 298, 2167-2170.
- Tillmann, B., Bharucha, J.J. & Bigand, E. (2003). Learning and perceiving musical structures: further insights from artificial neural networks. In R. Zatorre & I. Peretz (Eds.) *The Cognitive Neuroscience of Music*. Oxford University Press.
- Tillmann, B., Janata, P., & Bharucha, J.J. (2003). Activation of the inferior frontal cortex in musical priming. *Cognitive Brain Research*, 16, 145-161.
- Janata, P., Birk, J.L., Tillmann, B., & Bharucha, J.J. (2003). Online detection of tonal pop-out in modulating contexts. *Music Perception*, 20, 283-306.
- Tillmann, B., Janata, P., Birk, J., & Bharucha, J.J. (2003). The costs and benefits of tonal centers for chord processing. *Journal of Experimental Psychology: Human Perception and Performance*.29: 470-482.
- Janata, P., Tillmann, B., & Bharucha, J. J. (2002). Listening to polyphonic music recruits domain-general attention and working memory circuits. *Cognitive, Affective, and Behavioral Neuroscience*, 2, 121-140.
- Tillmann, B. & Bharucha, J.J. (2002). Effect of harmonic relatedness on detection of temporal asynchronies. *Perception & Psychophysics*, 64, 640-649.
- Justus, T.C. & Bharucha, J.J. (2002). Music perception and cognition. In H. Pashler & S. Yantis (Eds.), *Stevens Handbook of Experimental Psychology (3rd Ed.)*. New York: Wiley.
- Justus, T.C. & Bharucha, J.J. (2001). Modularity in musical processing: The automaticity of harmonic priming. *Journal of Experimental Psychology: Human Perception and Performance*, 27, 1000-1011.
- Tillmann, B., Bharucha, J.J., & Bigand, E. (2001). Implicit learning of regularities in Western tonal music by self-organization (pp. 175-184). In R.M. French & J.P. Sougne (Eds), *Connectionist Models of Learning, Development and Evolution*. Heidelberg: Springer.
- Tillmann, B, Bharucha, J.J. & Bigand, E. (2000). Implicit learning of tonality: A self-organizing approach. *Psychological Review*, 107, 885–913.
- Tillmann, B. & Bharucha, J.J. (1999). Perceiving and learning harmonic structure: Some news from MUSACT. *International Journal of Computing Anticipatory Systems*, 4, 289-300.
- Bharucha, J.J. (1998). Neural nets, temporal composites and tonality. In D. Deutsch (Ed.), *The Psychology of Music* (2d Ed.). New York: Academic Press. [Reprinted in Levitin, D.L. (Ed.) (2002), *Foundations of Cognitive Psychology*. Cambridge: MIT Press.]
- Tekman, H.G. & Bharucha, J.J. (1998). Implicit knowledge versus psychoacoustic similarity in priming of chords. *Journal of Experimental Psychology: Human Perception & Performance*, 24, 252-260.

- Bharucha, J.J. (1996). Melodic anchoring. *Music Perception*, 13, 383-400.
- Bharucha, J.J. & Mencl, W.E. (1996). Two issues in auditory cognition: Self-organization of categories and pitch-invariant pattern recognition. *Psychological Science*, 7, 142-149.
- Bharucha, J.J. (1995). Neural nets and musical cognition. In R. Steinberg (Ed.), *Music and the Mind Machine* (pp. 99-104). Berlin/New York: Springer.
- Bharucha, J.J. (1995). Editorial. *Music Perception*, 3, 271-272.
- Bharucha, J.J. (1993). Tonality and expectation. In R. Aiello (Ed.), *Musical Perceptions* (pp. 213-239). Oxford: Oxford University Press. (Translated into Japanese).
- Tekman, H.G. & Bharucha, J.J. (1992). Time course of chord priming. *Perception & Psychophysics*, 51, 33-39.
- Bharucha, J.J. (1992). Tonality and learnability. In M.R. Jones & S. Holleran (Eds.), *Cognitive bases of musical communication* (pp. 213-223). Washington, DC: American Psychological Association.
- Tramo, M.J., & Bharucha, J.J. (1991). Musical priming by the right hemisphere post-callosotomy. *Neuropsychologia*, 29, 313-325.
- Bharucha, J.J. (1991). Cognitive and brain mechanisms in perceptual learning. In J. Sundberg, L. Nord & R. Carlson (Eds.), *Music, Language, Speech and Brain* (pp. 349-358). London: Macmillan.
- Bharucha, J.J. (1991). Pitch, harmony and neural nets: A psychological approach. In P. Todd & G. Loy (Eds.), *Music and Connectionism* (pp. 84-99). Cambridge: M.I.T. Press.
http://books.google.com/books?id=NxycaQH6PeoC&pg=PA84&lpg=PA84&dq=bharucha+todd+loy+pitch+harmony&source=bl&ots=AvRopBvtAG&sig=cpPjsNeIJkXYaa_Vv-6kcKx1GEM&hl=en&ei=tjRDTbn0OYn4gAexovGUAg&sa=X&oi=book_result&ct=result&resnum=1&ved=0CBYQ6AEwAA#v=onepage&q&f=false
- Bharucha, J.J., & Todd, P. (1991). Modeling the perception of tonal structure with neural nets. *Computer Music Journal*, 13, 44-53. [Reprinted in P. Todd & G. Loy (Eds.), *Music and Connectionism* (pp. 128-137). Cambridge: M.I.T. Press.]
http://books.google.com/books?id=NxycaQH6PeoC&pg=PA128&lpg=PA128&dq=bharucha+todd+loy&source=bl&ots=AvRopAEBzC&sig=vN3tp7oeHA6tfqiddV9rftmlnK8&hl=en&ei=4TNDTYHdKoOKlwfOxJn_Dw&sa=X&oi=book_result&ct=result&resnum=1&sqi=2&ved=0CBYQ6AEwAA#v=onepage&q=bharucha%20todd%20loy&f=false
- Tramo, M.J., Bharucha, J.J., & Musiek, F.E. (1990). Music perception and cognition following bilateral lesions of auditory cortex. *Journal of Cognitive Neuroscience*, 2, 195-212.
- Bharucha, J.J., & Olney, K.L. (1989). Tonal cognition and artificial intelligence: Priming studies and connectionist modelling. *Contemporary Music Review*, 4, 341-356. [Reprinted in

McAdams & Deliege (Eds.), *Music and the Cognitive Sciences*. New York: Harwood.
Translated and published in French as *La Musique et les Sciences Cognitives*. Brussels:
Pierre Mardaga Editions.]

Hubbard, T. L., & Bharucha, J.J. (1988). Judged displacement in apparent vertical and horizontal motion. *Perception & Psychophysics*, 44, 211-221.

Bharucha, J.J. (1987). Music cognition and perceptual facilitation: A connectionist framework. *Music Perception*, 5, 1-30.

Bharucha, J.J., & Stoeckig, K. (1987). Priming of chords: Spreading activation or overlapping frequency spectra? *Perception & Psychophysics*, 41, 519-524.

Bharucha, J.J. (1987). MUSACT: A connectionist model of musical harmony. In *Proceedings of Ninth Annual Conference of the Cognitive Science Society* (pp.508-517). Hillsdale, NJ: Lawrence Erlbaum.

Bharucha, J.J., Meike, B., & Baird, J.C. (1987). The Macintosh as a user-friendly laboratory for perception and cognition. *Behavior Research Methods, Instruments, & Computers*, 19, 131-134.

Bharucha, J.J., & Stoeckig, K. (1986). Reaction time and musical expectancy: Priming of chords. *Journal of Experimental Psychology: Human Perception and Performance*, 12, 403-410.

Bharucha, J.J., & Pryor, J. (1986). Disrupting the isochrony underlying rhythm: An asymmetry in discrimination. *Perception & Psychophysics*, 40, 137-141.

Bharucha, J.J. (1986). Review of *Cognitive processes in the perception of art* by W.R. Crozier & A.J. Chapman. *Music Perception*, 3, 315-322.

Krumhansl, C., & Bharucha, J. (1986). 1) Absolute pitch. 2) Psychology of music. 3) Tests of musical capacity and ability. In D.M. Randel (Ed.), *Harvard Dictionary of Music* (Rev. ed.). Cambridge: Harvard University Press.

Bharucha, J.J., Olney, K.L., & Schnurr, P.P. (1985). Detection of coherence-disrupting and coherence-conferring alterations in text. *Memory & Cognition*, 13, 573-578.

Bharucha, J.J. (1985). Kognitive Musikpsychologie. In H. Bruhn, R. Oerter, & H. Rosing (Eds. and trans.), *Musikpsychologie: Ein Handbuch in Schlüsselpunkten* (pp. 123-132). Munich: Urban & Schwarzenberg.

Bharucha, J.J. (1984). Anchoring effects in music: The resolution of dissonance. *Cognitive Psychology*, 16, 485-518.

Bharucha, J.J. (1984). Event hierarchies, tonal hierarchies, and assimilation: A reply to Deutsch and Dowling. *Journal of Experimental Psychology: General*, 113, 421-425.

Castellano, M.A., Bharucha, J.J., & Krumhansl, C.L. (1984). Tonal hierarchies in the music of North India. *Journal of Experimental Psychology: General*, 113, 394-412.

Bharucha, J.J., & Krumhansl, C.L. (1983). The representation of harmonic structure in music: Hierarchies of stability as a function of context. *Cognition*, 13, 63-102.

Krumhansl, C.L., Bharucha, J., & Castellano, M.A. (1982). Key distance effects on perceived harmonic structure in music. *Perception & Psychophysics*, 32, 96-108.

Krumhansl, C.L., Bharucha, J.J., & Kessler, E.J. (1982). Perceived harmonic structure of chords in three related musical keys. *Journal of Experimental Psychology: Human Perception and Performance*, 8, 24-36.

Rahman, Y.E., Hanson, W.R., Bharucha, J.J., Ainsworth, E.J., & Jaroslow, B.N. (1978). Mechanisms of reduction of antitumor drug toxicity by liposome encapsulation. *Annals of the New York Academy of Sciences*, 308, 325-342.

CURRICULAR SOFTWARE DEVELOPED AND DISTRIBUTED

MindLab (Macintosh program for picture-oriented experiments in psychology; Developed with Blake Meike, John C. Baird and the Dartmouth Courseware Development Group; Sold by Intellimation Library for the Macintosh.)

DartNet (Backpropagation neural net simulator for the Macintosh; Developed with Sean Nolan '94).

INVITED LECTURES/PANELS

Panel on “Psychology as a STEM discipline”, American Psychological Association convention, San Diego, August 14, 2010.

Wellesley College neuroscience colloquium, April 13, 2010.

Council on Foreign Relations, panel on higher education partnerships with India, New York, April 9, 2010.

Keynote address at Indo-American Education Summit, Bangalore, November 13, 2009.

“Music, Brain and Culture”, William Porter Memorial Lecture, US Army Soldier Systems Center, Natick, MA, June 29, 2009.

“Notes and Neurons: In Search of Common Chorus”, World Science Festival, New York, June 12, 2009. (With Daniel Levitin, Bobby McFerrin, Lawrence Parsons; produced by Elena Mannes, Jessica Bari):

“Music, Learning & the Mind”, Longy School of Music Board of Visitors, April 14, 2009.

Panel on “The Cognitive Age”, *New England Association of Schools and Colleges*, 123rd Annual Meeting and Conference, Boston, December 4, 2008.

Panel on “21st Century Science & Engineering Programs and Talent Partnerships”, US-China-India Innovation Partnership Conference, *Mass Insight Corporation*, Boston, December 12, 2008.

Teagle Foundation Board of Trustees, “Cognitive Dilemmas for Higher Education”, February 22, 2008.

Distinguished Visitor, Carolyn Grant '36 Endowment, Vassar College, "Music, Mind and the Ineffable", February 21, 2008.

Center for the Enhancement of Teaching and Learning, Tufts University, "Cognitive Dilemmas for Higher Education", January 17, 2008.

American Council on Education, Washington, DC, 2007: Chaired panel on "Emerging Models of Partnerships" in conference From Competition to Collaboration: Thriving in a Global Future/US-UK Leadership Dialogue Workshop.

Music Department Colloquium, Tufts University, "Music, Mind and Brain", November 5, 2007

Aspen Institute, Forum for the Future of Higher Education, "Cognitive Dilemmas for Higher Education", October 2, 2007

Keynote address: "Musical Communication as Alignment of Non-propositional Brain States". Conference on Language and Music as Cognitive Systems. Cambridge University, May 12, 2007.

Phi Beta Kappa, Oration, Delta chapter of Massachusetts, April 22, 2007: "Learning, Cognition and the Brain".

"Education, Cognition and the Brain". Conference on The Future of Teaching and Learning in Higher Education, Medford, MA, Feb 2, 2007.

"Education, Cognition and the Brain". Conference on Teaching as Civic Engagement, Medford, MA, Oct 14, 2006.

Smith College, December 8, 2006: "Music, Brain and Culture".

Harvard University, Humanities Center, Series on "Cognitive Theory and the Arts", December 7, 2006: "Cultural Differences in Music and Perception: Studies Using fMRI and Neural Net Models".

Tufts Parents Weekend Closing Lecture "Truth, Lies and MRI's", 2006.

Hampshire College, Program in Culture, Brain & Development, 2006: "Music, Brain and Culture".

Charles River District Medical Society, 2006: "Music and the Brain".

Psychiatry Grand Rounds, Tufts-New England Medical Center, 2005: "Music and the Brain".

Massachusetts Medical Society (Norfolk District), 2005: "Music and the Brain".

McGill University, Hebb Lecture Series, 2005: "The Cognitive Nature of Music"

St. Botolph's Club, Boston, 2005.

Vassar College, Annual Distinguished Achievement Award Lecture. Poughkeepsie, NY, 2005: "Mind, Brain and Music".

"The Brain on Music". Lectures for Tufts alumni and parents. Philadelphia, New York, New Haven, San Francisco, Los Angeles, Boston, New Hampshire, Miami, Palm Beach, Atlanta, Chicago, Portland (ME), Seattle, Houston, St. Louis, Cleveland, 2003-07.

Hampshire College, 2003

Tufts University, Department of Neuroscience, 2002

Harvard University, Humanities Center, 2001.

Dartmouth College, Minary Conference on Cognitive Neuroscience and the Arts, 2001.

McGill University, 2001

Inaugural lecture for John Wentworth Professorship, Dartmouth, 2000

Reed College, Departments of Psychology and Music, 2000

Symposium on the Neuroscience of Music, Niigata, Japan, 1999

Université Rene Descartes, Department of Psychology, Paris, 1999

Université de Bourgogne, Psychology Colloquium, 1998

Columbia University, Department of Music Colloquium, 1998

Dartmouth Club of Boston, 1998

National Academy of Science, 1997
McDonnell-Pew Summer Institute in Cognitive Neuroscience, Dartmouth, 1990, 1991, 1992, 1996, 1997
Dartmouth Horizons program for alumni, 1997, 1998, 1999, 2000, 2001
Dartmouth Medical School, Department of Audiology, 1994, 1996
Dean's Council, Dartmouth College, April, 1995
University of California, Berkeley, Department of Psychology, 1994
Center for Advanced Study in the Behavioral Sciences, Stanford, 1994
Vassar College, Psychology Colloquium, 1994
Stanford/Berkeley Symposium in Music Cognition, Stanford Department of Music, 1994
Stanford University, Center for Computer Research in Music and Acoustics (CCRMA), 1994
Stanford University, Department of Psychology, 1993
UCLA, Cognitive Science, 1993
Harvard Medical School, Eaton-Peabody Laboratory, 1993
Queens University (Canada), Department of Psychology, 1993
E.E. Just Symposium, Dartmouth College, 1993
University of Pennsylvania, Psychology Colloquium, 1992
Johns Hopkins University, Psychology Colloquium, 1992
Siemens Institute (Congress on the Psychophysiology and Psychopathology of Music), Munich, Germany, 1992
M.I.T. Media Lab, 1991
University of Washington, School of Music, 1991
Bates College, Psychology Colloquium, 1991
International Wenner-Gren Symposium on Music, Language, Speech and Brain, Stockholm, Sweden, 1990
Herbert von Karajan Symposium on Musical Intelligence, Vienna, Austria, 1990
Ohio State University (APA symposium on Cognitive Bases of Musical Communication), 1990
Columbia University, Psychology Colloquium, 1989
Queens University (Canada), 1989
Ohio State University, Psychology Colloquium, 1989
Evergreen State College, Colloquium, 1989
M.I.T., Media Lab, 1988
University of Pennsylvania, Sloan Cognitive Science lecture series, 1988
Brown University, Department of Cognitive and Linguistic Sciences, 1988
Stanford University, Center for Computer Research in Music and Acoustics (CCRMA), 1988
Institut de Recherche et de Coordination Acoustique/Musique (IRCAM), Paris, 1988
Tata Institute of Fundamental Research, Bombay, 1986
University of Texas at Dallas, 1984
Vassar College, Cognitive Science colloquium, 1984