

# Sofia Dahl

## Curriculum Vitae

Copenhagen, April 15, 2009

**Born** March 4, 1972 in Stockholm, Sweden.

**Contact** Section for medialogy  
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### Appointments

- Aug 2008– present *Assistant professor*  
Section of Medialogy, Department of Media Technology, Aalborg University Copenhagen, Copenhagen, Denmark.  
Research (50%), Teaching and supervision of media technology students.
- Jan 2007–Aug 2008 *Marie Curie Intra-European Postdoctoral fellowship*  
Institute of Music Physiology and Musicians' Medicine, Hanover University of Music and Drama, Hanover, Germany.  
Full time research with Prof. Eckart Altenmüller. Capture and analysis of movement, muscle activity and sound production in healthy and diseased percussionists.
- Jan – Dec 2006 *Postdoctoral fellow*  
Cognitive and Systematic Musicology Lab, School of Music, Ohio State University, Columbus, U.S.A.  
Full time research with Prof. David Huron. Studies of preferred dance tempo and the perception of visual displays for people singing differing pitches.
- March – June 2001 *Guest researcher*  
Laboratorio di Informatica Musicale, Dipartimento di Informatica, Sistemistica e Telematica (DIST), Università di Genova, Italy.  
Full time research with Antonio Camurri. Capture and analysis of movement in percussion performances.
- Jan 1997– Dec 2005 *PhD Student*  
Dept. of Speech, Music and Hearing, KTH Royal Institute of Technology, Stockholm, Sweden. (Part-time until Dec 2001, then full time.) Work on production and perception of human movement and timing, including analysis of movement strategies and expression in percussion playing.
- Jan 1995–Sep 2000 *Personal caretaker and assistant*  
Part-time work helping persons with special needs (included a wide range of handicaps, from movement disabilities to blind and sight impaired).

### Education

- Jun 2006 *Ph.D., Speech and Music Communication*  
KTH Royal Institute of Technology, School of Computer Science and Communication, Department of Speech, Music, and Hearing, Stockholm, Sweden.

Dissertation Sep. 29, 2005. Thesis: *On the beat: Human movement and timing in the production and perception of music.*  
Advisors: Anders Askenfelt and Anders Friberg.  
Opponent: Prof. David Huron, Cognitive and Systematic Musicology Lab, School of Music, Ohio State University.  
Committee: Ann Lantz, KTH School of Computer Science and Communication; Patrik Juslin, Department of Psychology, Uppsala University, Uppsala, Sweden; Prof. Petri Toiviainen, University of Jyväskylä, Jyväskylä, Finland.

- May 2003 *Techn. Lic., Speech and Music Communication*  
KTH Royal Institute of Technology, School of Computer Science and Communication, Department of Speech, Music, and Hearing, Stockholm, Sweden.  
Thesis: *Striking Movements: Movement strategies and expression in percussion playing.*  
Advisors: Anders Askelfelt and Anders Friberg.  
Opponent: Prof. Alf Gabrielsson, Department of Psychology, Uppsala University, Uppsala, Sweden.
- Apr 2002 *University pedagogy, 2 credits*<sup>1</sup>  
KTH, Royal Institute of Technology.
- Aug– Nov 1999 *Neuroscience, 10 credits*  
Karolinska Institute, Stockholm, Sweden.
- Jan– Jun 1999 *Biomechanics, 10 credits*  
Stockholm University College of Physical Education and Sports, Stockholm, Sweden.
- Sep 1996– May 1998 Additional courses in *Acoustics, Mechanics, and Signal analysis, 22 credits*  
KTH, Royal Institute of Technology.
- Jan 1997 *University Diploma Electrical Engineering, Electronics*  
KTH, Royal Institute of Technology.  
Diploma project: *Spectral changes in the tom-tom related to striking force.*
- Sep 1994– Dec 1996 *Musicology, 50 credits*  
Stockholm University, Stockholm, Sweden.  
Project: *Women and Percussion.*
- Sep 1993– May 1994 *Studies in Music Performance*  
Wiks Folkhögskola, Uppsala, Sweden.

## Research Interests

Musicians' body movements and interaction with the instrument. Movements used for control and expression in music performance.

The relationship between action and perception in sound and music communication.

The production and perception of timing and tempo.

Visual perception of expressive movements and gestures.

The capture, analysis and characterization of movements in sound and music communication.

## Work in Externally Funded Research Projects

- Jan 2007–Aug 2008 *ASIAMS, Auditory and Sensorymotor Integration in the Acquisition and Maintenance of Skilled movements in musical performance.*

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<sup>1</sup>One credit in the Swedish system represents one week's full-time study, and 40 credits one full academic year.

Marie Curie Intra-European Fellow at Hanover University of Music and Drama, designing and performing measurements and analysis of movements and sound production for healthy and diseased percussionists. Principal investigator: E. Altenmüller. Funded by the European commission MOBILITY-2.1, EIF.

- Mar 2003–Mar 2007 COST Action 287 *ConGAS, Gesture CONtrolled Audio Systems*  
<http://www.cost287.org/> funded by the European commission.  
Appointed Swedish delegate, responsible for the collection and diffusion of knowledge from Sweden to the rest of Europe.
- Nov 2000–Oct 2003 *MEGA, Multisensory Expressive Gesture Applications*,  
<http://www.megaproject.org/> funded by the European commission (IST-1999-20410).  
Researcher in the team of project partner KTH. Working on analysis and applications of expressive gestures. Setting up and working on the movement capture and analysis in the interactive, collaborative game *Ghost in the Cave*. Experiments on visual perception on musicians' expressive gestures.
- Jan 2001–Dec 2002 *SOb, The Sounding Object*,  
<http://www.soundobject.org/> funded by the European commission (IST-2000-25287).  
Researcher in the team of project partner KTH. Working on gestural models to control physical sound models. Setting up and testing different interfaces used to control real-time drum models.
- Sep 2000–Sep 2001 IHP network, *MOSART, Music Orchestration Systems in Algorithmic Research and Technology*, funded by the European commission (HPRN-CT-2000-00115).  
Three months visiting researcher at Laboratorio di Informatica Musicale, Università di Genova, Italy. Working on capture and analysis of expressive movements.
- Feb 1997–Dec 1999 *Music and Motion*,  
funded by The Bank of Sweden Tercentenary Foundation.  
Researcher, performing measurements on percussionists movement strategies while playing.

## Teaching and supervision experience

- 2008 – Aalborg University Copenhagen (AAU)  
Department of Media Technology, Section of Medialogy.  
Teaching and supervision of Medialogy students on bachelor and master level.
- 2007–2008 Hanover University for Music and Drama (HMT)  
Institute of Music Physiology and Musicians' Medicine  
Involved in several of the courses running with recurrent talks and demonstrations on both undergraduate and graduate level. I also supervised a psychology student doing his internship.
- 1997–2005 KTH, School of Computer Science and Communication  
Department of Speech, Music and Hearing.  
During my years at KTH I participated in the teaching of a number of undergraduate courses and completed the course University pedagogy. Together with Anders Friberg and Roberto Bresin I also planned and taught the course *Musical Communication and Music Technology*, running for the first time in spring 2003.  
In addition to the regular courses, I was also responsible for the supervision of two international students.

## Reviewing assignments

Peer-reviewed journals:

- *Journal of Experimental Psychology: Human Perception & Performance*, 2008.

- *Music Perception*, 2008.
- *International Journal of Human-Computer Studies*, 2008
- *Journal of New Music Research*, 2008.
- *Human Movement Science* Special issue for 10th Rhythm Perception and Production Workshop, 2007.
- *Information Processing Letters*, 2007.

Conferences:

- *New Interfaces for Musical Instruments* Demo reviewer 2008.
- *International Computer Music Conference* Paper committee and reviewer 2007, reviewer 2005, 2006.

Thesis:

- *Doctoral dissertation*, external reviewer. Diego Dall'Osto, Tapping with music: Intervals and synchronization. Universitat Autònoma de Barcelona, Departament de psicologia bàsica, evolutiva i de l'educació, 2007.

## Awards

Jan 2007– Jun 2008 Marie Curie Intra-European Fellowship (EIF)

May 2008 Sempre Travel Award. Awarded by the Trustees of the Society for Education, Music and Psychology Research (SEMPRE)

## Invited talks, lectures and seminars

- 2008 Motor control in drumming: Influence of movement pattern on contact force and sound characteristics. (Together with Eckart Altenmüller). *Invited talk at ACOUSTICS'08, Joint meeting Acoustical Society of America, ASA, the European Acoustics Association, EAA, and the Société Française d'Acoustique, SFA*. Palais des Congrès, Paris, June 29 – July 4, 2008.
- Continuous movements generating discrete events: Preparations and limitations in drumming movements. *Invited talk at Musical Movement and Synchronization workshop*, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany May 3–4, 2008.
- Expression and control in music performance: Information conveyed through musicians' movements. *Invited seminar at Deutsche Telekom Laboratories*, Berlin, Germany, Jan 21, 2008.
- 2007 Studying expression and control in musicians' movements. *Invited seminar at Music, Informatics and Cognition*, Edinburgh University, Edinburgh, U.K. Oct 23, 2007.
- Moving for control and expression: Musicians' use of gesture in performance. *Invited talk at Medialogy Lab*, Aalborg University Copenhagen, Copenhagen, Denmark, May 22, 2007.
- 2006 Looking at movement gesture: Examples from drumming and percussion. *Invited talk at Workshop on Motion Capture for Music Performance*. CIRMMT - Centre for Interdisciplinary Research in Music Media and Technology, McGill University, Montreal, Canada, Oct 31, 2006.
- Music and movement. *Invited talk at Cognitive and Systematic Musicology Lab*, School of Music, Ohio State University, Columbus, Oct 26, 2006.
- Production and perception of gestures in music performance, *Invited talk at the Second International Conference on Music and Gesture*. Royal Northern College of Music, Manchester, U.K., Jul 22, 2006.

- 2005 Att hålla takten. Tempodrift hos tränade musiker och individuella skillnader i uppfattningen av konstant tempo. *Invited seminar in Music psychology, Department of Psychology, Uppsala University, Sweden, Dec 2, 2005.*
- On the beat: Movements and timing in drumming and perception of tempo drift. *Invited talk at the Sensory Motor Neuroscience group, School of Psychology, University of Birmingham, U.K., Sep 12, 2005.*
- Gestures in music performance: Examples from drumming strategies and expressive movements. *Invited seminar at the Perception Action Cognition group, Psychology Department, University of Glasgow, U.K., Feb 25, 2005.*
- 2001 The accented stroke - Kinematics and timing. *Invited talk at The Gesture Workshop: Gesture Devices for Digital Audio Control. Tempo Reale, Florence, Italy, Apr 30, 2001.*

### Popular Scientific Work and Media appearances

- 2008 S. Dahl and E. Altenmüller *Movements and grip influence the contact force and sound in drumming.* Acoustical Society of America ASA/EAA/SFA '08 Meeting Lay Language Papers.
- 2008, Feb. 4 Interview in German Television, ARD Morgenmagazin,
- 2007, May 16 Open drummers' workshop at Tonskóli, Neskaupstadur, Iceland.
- 2003, Oct. 26 Appearance in Swedish National Television (SVT) ABC nytt. The game Ghost in the Cave was presented.
- 2002, autumn Interview in Swedish National Television (Utbildningsradion) Jorden är platt.
- 1999 S. Dahl and V. P. Stokes, *Measurement of Arm Motion, Timing and Striking Force in a Simple Drumming Task* (Popular version of paper 5aMUa5), Acoustical Society of America ASA/EAA/DAGA '99 Meeting Lay Language Papers.

### Miscellaneous

*Citizenship:* Swedish

*Languages (In order of fluency):* Swedish, English, German, Danish, Italian

*Music Experience:* Active playing the drums in various constellations since 1986. I have a broad experience in various genres and styles of playing and also with different kinds of percussion.

### Referees

Letters of reference can be obtained on request.

## List of Publications

### Journal Papers

Dahl, S. and Friberg, A. (2007). Visual perception of expressiveness in musicians' body movements. *Music Perception*, 24(5):433–454.

Dahl, S. (2004). Playing the accent - comparing striking velocity and timing in an ostinato rhythm performed by four drummers. *Acta Acustica united with Acustica*, 90(4):762–776.

Dahl, S. and Granqvist, S. (2003). Estimating Internal Drift and Just Noticeable Difference in perception of continuous tempo drift. *The Neurosciences and Music, Annals of the New York Academy of Science*, 999:161–165.

Dahl, S. (2000). The playing of an accent - preliminary observations from temporal and kinematic analysis of percussionists. *Journal of New Music Research*, 29(3):225–233.

### Book Chapters

Dahl, S. et. al. Gestures in performance. To appear in Leman, M. and Godøy, R. I., editors, *Music and Gesture Foundations*. Book chapter to be printed by Routledge.

Dahl, S. (2006). Movements and analysis of drumming. In Altenmüller, E., Wiesendanger, M., and Kesselring, J., editors, *Music, Motor Control and the Brain*, pages 125–138. Oxford University Press, New York.

Bresin, R. and Dahl, S. (2003). Experiments on gestures: walking, running, and hitting. In Rocchesso, D. and Fontana, F., editors, *The sounding object.*, pages 111–136. Mondo Estremo, Florence, Italy.

Bresin, R., Falkenberg Hansen, K., Dahl, S., Marshall, M., and Moynihan, B. (2003). Devices for manipulation and control of sounding objects: The Vodhran and the Invisiball. In Rocchesso, D. and Fontana, F., editors, *The sounding object.*, pages 271–296. Mondo Estremo, Florence, Italy.

### Refereed Conference Proceedings

Dahl, S. and Huron, D. (2007). The influence of body morphology on preferred dance tempos. In *Proceedings of the International Computer Music Conference*, volume 2, pages 1–4. International Computer Music Association.

Dahl, S. and Friberg, A. (2004). Expressiveness of musician's body movements in performances on marimba. In Camurri, A. and Volpe, G., editors, *Gesture-based Communication in Human-Computer Interaction*, volume 2915 of *Lecture Notes in Artificial Intelligence*, pages 479–486. Springer Verlag.

Rinman, M.-L., Friberg, A., Bendiksen, B., Cirotteau, D., Dahl, S., Kjellmo, I., Mazarino, B., and Camurri, A. (2004). Ghost in the Cave - An interactive collaborative game using non-verbal communication. In Camurri, A. and Volpe, G., editors, *Gesture-based Communication in Human-Computer Interaction*, volume 2915 of *Lecture Notes in Artificial Intelligence*, pages 549–556. Springer Verlag.

Dahl, S. and Friberg, A. (2003). What can body movements reveal about a musician's emotional intention? In Bresin, R., editor, *Proceedings of Stockholm Music Acoustic Conference 2003*, volume Vol. II, pages 599–602, Stockholm, Sweden.

Dahl, S. and Granqvist, S. (2003). Looking at perception of continuous tempo drift - a new method for estimating Internal Drift and Just Noticeable Difference. In Bresin, R., editor, *Proceedings of Stockholm Music Acoustic Conference (SMAC03)*, 6-9 August 2003, volume II, pages 595–598, Stockholm, Sweden.

Rinman, M.-L., Friberg, A., Kjellmo, I., Camurri, A., Cirotteau, D., Dahl, S., Mazarino, B., Bendiksen, B., and McCarthy, H. (2003). ESP- an interactive collabo-

rative game using non-verbal communication. In Bresin, R., editor, *Proceedings of Stockholm Music Acoustic Conference (SMAC03)*, 6-9 August 2003, volume II, pages 561–564, Stockholm, Sweden.

Dahl, S. and Bresin, R. (2001). Is the player more influenced by the auditory than the tactile feedback from the instrument? In Fernström, M., Brazil, E., and Marshall, M., editors, *Proceedings of the Cost-G6 Conference Digital Audio Effects, (DAFx01)*, 6-8 December 2001, pages 194–19, Limerick, Ireland.

Bresin, R., Friberg, A., and Dahl, S. (2001). Toward a new model for sound control. In Fernström, M., Brazil, E., and Marshall, M., editors, *Proceedings of the Cost-G6 Conference Digital Audio Effects, (DAFx01)*, 6–8 December 2001, pages 45–49, Limerick, Ireland.

Dahl, S. (2001). Arm motion and striking force in drumming. In Gerber, H. and Müller, R., editors, *Proceedings of XVIIIth congress of the International Society of Biomechanics, 8–13 July 2001*, (CD-ROM), Zürich, Switzerland.

Dahl, S. (2001). Arm motion and striking force in drumming. In Bonsi, D., Gonzalez, D., and Stanzial, D., editors, *Proceedings of the International Symposium on Musical Acoustics, Musical Sounds from Past Millennia, 10-14 September 2001*, volume 1, pages 293–296, Perugia, Italy.

Dahl, S. and Stokes, V. P. (1999). Measurement of arm motion, timing and striking force in a simple drumming task. In *Journal of the Acoustical Society of America*, volume 105, page 1328. Acoustical Society of America.

#### **Invited Conference Proceedings**

Dahl, S. and Altenmüller, E. Motor control in drumming: Influence of movement pattern on contact force and sound characteristics. in *Proceedings of the Acoustics'08 Paris*.

Dahl, S. (2006). Production and perception of gestures in music performance. In Gritten, A. and King, E. (Eds.), *Proceedings of the Second International Conference on Music and Gesture*, 20–23 July 2006 Royal Northern College of Music, Manchester, UK, pp.59-64 (CD-ROM).