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Choral performance interaction: Relating movement variation and tuning variability.

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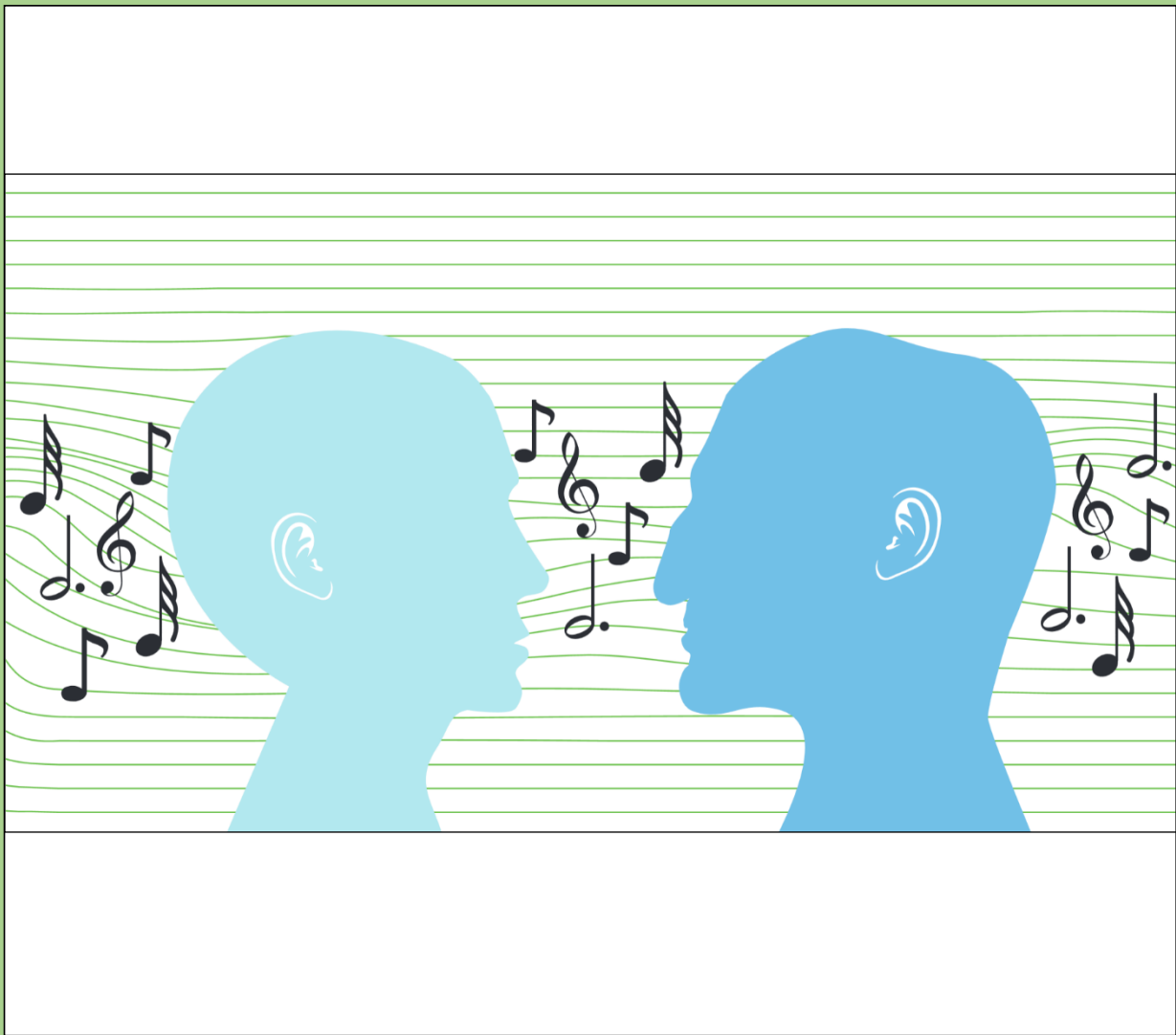
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**Global Arts and Psychology Student Conference
(GAPS2017)**

28-29 April 2017, Boston, Graz, La Plata, Sheffield,
Sydney

Global Program and Abstracts

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1. Introduction

GAPS is about the arts and the people who create and appreciate them, from a psychological perspective. The arts include auditory arts (music, sound design), visual arts (painting, architecture), literature, drama, opera, digital arts, and so on. We will focus on music. There will be about 8 research presentations at each hub. There will also be 3 keynotes, which will be viewed by all hubs.

GAPS will be the world's first semi-virtual academic conference. GAPS will strike a new balance between face-to-face and virtual communication, and between activities on different continents, to create a truly global conference. Every talk will be both live and virtual — presented to a live local audience and viewed elsewhere, either in real time or with a time delay. Live and virtual presentations will run in parallel at every hub. In July 2018, the new format will be scaled up for the international music psychology conference ICMPC15/ESCOM10.

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2. Participating Hubs and organization

Graz:

Centre for Systematic Musicology

University of Graz

Austria



Conference Manager: Maximilian Burkard

Vice-Manager: Julia Ebner

Technical Manager: Nils Meyer-Kahlen

Programming Manager: Theresa Schallmoser

Promotion Manager: Hanna Pell

Refreshments Manager: Magdalena Ramsey

Room manager: Michael Schlott

Sydney:

School of the Arts and Media

University of South Wales

Australia



Conference Manager: Riza Veloso

Technical Manager: Anthony Chmiel

Programming Manager: Marco Susino

Promotion Manager: Thomas Dickson

Sheffield:

Department of Music

Sheffield University

UK



The
University
Of
Sheffield.

Conference Manager: Shen Li

Technical Manager: Caroline Curwen

Programming Manager: Tim Metcalfe

Promotion Manager: Ioanna Filippidi

Conference Assistant: Nicola Pennil

La Plata:

Laboratorio para el Estudio de la Experiencia Musical

Universidad Nacional de La Plata

Argentina



UNIVERSIDAD
NACIONAL
DE LA PLATA

Conference Managers: Alejandro Pereira Ghiena and Joaquín Pérez

Technical Manager: Sebastián Castro

Programming Manager: Camila Beltramone

Promotion Manager: Matías Tanco

Refreshments Manager: Demián Alimenti Bel

Room manager: Alejandro Ordás

Language Manager: Nicolás Alessandrini

Boston:

Friedman School of Nutrition Science and Policy

Tufts University

USA



Tufts
UNIVERSITY

Conference Manager: Ola Ozernov-Palchik

Room Manager: Mehreen Ismail

Programming Manager: Inbar Vanek

Refreshments Manager: Victoria Chase

Choral performance interaction: Relating movement variation and tuning variability.

Background

Choir performance is a form of social musical practice where both individuals and ensemble join actions to build a musical piece. In traditional choral theory, the performative role of the conductor is overestimated with respect to the choristers'. However, this biased view forgets that conductor and choristers are both performers, losing track of the interactive process that takes place in choral practice. In this study, we analyse the multimodal interaction that is generated inside the choir. Applying micro-analytical observation techniques, we look for multimodal cues (vocal tuning, conductor and choristers body movements) to describe meaning construction in the choir. We predict that the vocal homogeneity -usually conceived as the outcome generated by the conductor's actions- is indeed the result of a multiple-way performative process that hides internal sound-kinetic variability.

Aims

To identify -through multimodal analysis- sound-kinetic features of the conductor-choir performance that can be cues to describe the variability that characterizes the practice of an amateur choir.

Method

Fifteen choristers of an amateur choir were video-and-sound recorded using separate audio tracks and individual microphones to register each participant's voice during rehearsal of a choral performance. To analyse the vocal signal, the pitch profile for each note -as detected in the onset analysis- was considered. The mean pitch for that note was taken as a normal average of 70% of an arbitrary perceptual window (0.1s). The resulting mean height was compared to the correct heights adjusted to A-440 frequency; deviations were calculated in cents. A pattern of deflection of each singer's tuning was obtained. The capture and analysis of movement data -taken from the video recording- were carried out using Tracker. The movement descriptor was the distance traveled by each body part from one point to another within-between frames; it was calculated as the Euclidean distance between subsequent 2D coordinates. The quantity of pixels' movement for each note sang by participants was calculated using the time annotation score of the choir performance. Each choir participant's tuning pattern was overlapped with both the choir and conductor's movement profiles.

Results

Taking an interactive perspective we observed that, in general, movements that conform the conducting gestures are loaded with visual cues (and with multimodal redundancy at times) providing information that facilitates and/or enables local and/or global vocal tuning. On the other hand, we identified singers' movements that seem to respond -through embodied attuning- to that cues. Also, when a group sings a musical segment that should be vocally emphasized in musical interpretation, it emerges a gestural sound-and-movement communion between choristers and conductor, and between the choristers themselves.

Conclusions

The synchrony of what is being sung, and the interaction with what is conducting, are embodied attuning forms. Interactions between all participants are understood from a perspective of attuning. Being together in time is not a one-way linear relationship where the conductor performs an action and the choir answers. We discuss variability in terms of features of differentiation-undifferentiation within the individual and the group rooted in the conception of the social practice in the choir.

Keywords: Choral practice, Choral Conducting, Intersubjectivity, Vocal tuning, Movement, Multimodal cues

Topics: Methods and epistemology, Psychoacoustic, pitch and timbre, Rhythm and movement