

# The role of gaze and other body movements in collaborative decision-making: A study on coordinating turns in a contemporary dance improvisation exercise

Vito Evola, Joanna Skubisz, Carla Fernandes

BlackBox Project, Faculdade de Ciências Sociais e Humanas, Universidade Nova de Lisboa (BlackBox, FCSH-UNL) – Portugal

How does a group of people collaborate and take turns when no speaking is allowed? Unlike previous studies on turn-taking (e.g. Duncan 1972; Sacks, Schegloff & Jefferson 1974; Kendon 1967; Ochs et al. 1996), the context of this inquiry is linguistically independent. The present study intends to contribute to the literature by presenting data collected in a silent improvisation session in the context of the performing arts and its quali-quantitative analysis, where the focus is on how the body, rather than speech, participates in collaborative decision-making. Five expert performers and five non-performers, joined by choreographer João Fiadeiro, were filmed separately during a contemporary dance exercise, the "Real-Time Composition Game" (Fiadeiro 2007). The Game involves participants sitting around a table, and through means of self-selection, performing single actions at a time on a table using various objects to develop compositions and learn the nature of improvisation.

A micro-analysis of portions of the session was conducted using ELAN (Lausberg & Sloetjes 2009). The annotation scheme codes for: a) directedness behavior (spatial location and orientation of the body, gaze points, object interaction); b) a formal description of movement units (MUs) of the various articulators; and c) a hermeneutic tier categorizing the functional-semiotic interpretation of the MUs (following a hierarchical taxonomy: self-focused, context-focused; communication-focused). The first two levels of annotation have an objective quality; the third level, based on the previous ones, describes raters' subjective interpretation of the participants' movements.

Despite completing the task both collaboratively and creatively, the non-performer group reverted to those turn-taking strategies common in everyday social interactions, minus those involving the vocal modality (i.e. frequent gaze shifts and communicative body movements). In contrast, we found that intersubjectivity was actively avoided by the expert group, both in the performers' bodily movements and mutual gaze, with turn management being regulated by means of alternative cognitive and social strategies, which will be presented. Besides the differences in communicative body movements across the groups, we will also compare self-focused movements, produced as neurophysiological responses to a cognitive load.

A qualitative macro-analysis of the two groups' entire sessions will focus on features directly related to the decision-making process throughout the improvisation exercises, such as hesitation versus determination. These differences will be analyzed under the light of recent literature focusing on social cognition and decision-making (inter alia Frith & Singer 2008). Constraints such as common knowledge, alignment, trust and the interaction of reason and emotion will be taken into account to contrast the results between the groups.

The results of these analyses and their implications for computational modeling of turns in the context of multimodality, as well as the relevance with questions of embodiment, creativity, and performance will be discussed together with future research.

Keywords: contemporary dance improvisation, creativity, decision making, gaze, intersubjectivity, Practice Theory, social cognition, social interaction and coordination, turn taking

