Grounding Concept Formation in Musical Activity

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Abstract. This paper presents the outcome of case study research on concept formation and creativity in the development of instrumental skill in music performance. Contents of one masterclass from each instrument of a world class symphony orchestra were analyzed using the following criteria: aspect (of musical activity discussed), modality (of instruction), referential directness (direct, indirect, oblique), method of instruction (what is to be done and how), instrumental particulars (bodily systems engaged). In instrumental performance, musical thought directs attention to the coordination of bodily systems involved in sound activation. Musical thinking is a restructuring of the particulars of this engagement to achieve a focal target. Focal targets may be drawn from a number of domains of coordination at different units and levels of analysis. This work challenges the long-held view that the concepts of musical thought are *music-structural*: occurring on a materials basis, defined by categories derived from listening to musical sound. Rather, this work demonstrates that *movement* is the home domain for concept formation in instrumental performance, not *sound* as previously supposed. Furthermore, this method of understanding cognition in instrumental performance may lead to a greater appreciation for cross-genre and cross-cultural studies of cognition in musical activity.

Keywords: concept formation, embodiment, musical activity

1 Case Study Description

Data for this case study were gathered from a series of masterclasses produced by a world class symphony orchestra. Each section of the orchestra produced one masterclass designed to prepare instrumentalists for a taped audition for participation in a global musical event. Taken as a group, the masterclasses present ideas about musical thought, learning, and performance that are important to the organizational culture of this orchestra and as such can be viewed as "instrumental" in understanding musical thought from the point of view of skilled orchestral musicians.

The transcripts were created by extending from David McNeill's conventions for transcribing words and gestures [1] to include musical utterances in addition to verbal and nonverbal communicative content. In case study research, the identification of analyzable units follows the ontological commitments of the approach. This research takes an activities ontology following Herbert H. Clark's approach to analyzing language use [2]. Following Clark, the content in each lesson is organized into nested activities identified by the initiation, maintenance, and termination of a procedural unit of

communication based on the goals, roles, and contributions of participants. This allows a description of the aspect, the communicative modality, the referential directness, the method of instruction, and the instrumental particulars [3] addressed in each activity.

Table 1. Units of Analysis

Unit	Description
Aspect	what is addressed (e.g., embouchure, bowing, timing, vibrato)
Modality	speech, gesture, playing
Referential Directness	is the aspect addressed directly, indirectly, or in an oblique manner
Method of Instruction	what is to be done, how
Instrumental Particulars	bodily systems engaged (proximal terms, manipulanda, or instrumental technique)

The analysis identified 24 aspects of music performance covering a range of themes that emphasize how orchestral players prioritize attention in musical activity [3]. The main themes include positioning sound, musical agency, negotiated roles, embodiment, metacognition, resisting natural tendencies, distorting musical utterances, creative self-concept, interpretive flexibility, and metaphoric projection [3].

The analysis suggests that performance in an orchestra involves situated listening and skillful management of multi-modal processes. This analysis points to a definition of musical creativity that is based on the skillful management of focal targets in orchestral music performance [3]. The musicians negotiate musical meaning on the basis of a shared understanding of tacit processes in musical activity. More research is needed to specifically address each of these themes as they relate to cognition in music performance. In particular, future research should begin with the recognition that performance in an orchestra is creative in the exceptional sense discussed in Barsalou & Prinz (2002), involving the management and manipulation of modal processes in the perceptual symbol system [6]. In the meantime, the passage that follows presents a more detailed picture of concept formation in instrumental practice as a negotiation of tacit knowledge.

2 Layering of Instrumental Particulars

Analyzing the particulars of instrumental performance requires some knowledge of how musical instruments are played [3]. However, it is not enough to understand instrumental technique; one must be able to organize that knowledge into a framework that is useful for analysis. This research methodology draws on Michael Polanyi's formulation of tacit knowledge [7] to organize instrumental technique into a framework useful for analyzing embodied concept formation in instrumental practice. Following Polanyi, I identify four dimensions of tacit knowledge in instrumental performance: *functional, phenomenal, semantic,* and *ontological*. These dimensions are used to describe how an instrumentalist comes to recognize an aspect of physical engagement,

attend to it focally as a perceptual unit, understand and use it as a source of meaning, and come to recognize this aspect as a source of creativity in the negotiation of musical meaning [3].

A good way to understand this conceptualization is through an analysis of a master-class by a world-famous bassoonist, an instruction on practicing the orchestral excerpt for the opening to the Overture of W.A. Mozart's *Marriage of Figaro*. The bassoonist identifies an overall target or aim, then presents a plan for practicing the excerpt that builds awareness of finger motion through a staged process of building up the notes and an exercise in applying varied rhythms to the passage. These exercises build an awareness of fingering as a conceptual unit "the fingering becomes a thing" to master [3]. Once the fingering is mastered it is available for use in phrasing and direction. Essentially, the bassoonist can now "move in a direction" with the notes. Finally, the bassoonist can attend focally to positioning their sound in relation to the strings.

Table 2. Layering of Targets

Layer	Target of Focal Awareness	Aspect of Tacit Knowledge
One	smoothness of fingers	functional/phenomenal
Two	varied rhythms	functional/phenomenal
Three	move in a direction with it	semantic
Four	blend with the strings	semantic/ontological

The structure of tacit knowledge addresses how instrumental particulars can reside in subsidiary awareness to be called up in the achievement of a new focal target. Focal targets can include aspects of music making in several domains of coordination [3]. While these targets are often tacit, they are nonetheless understood and shared as aspects of common ground [2] in musical activity. For each unit and level of analysis, there is a basis for participation, a field of operation, informational resources, and a situation, a musical event defined by the transformation of targets in musical activity.

References

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