

represent a shift from performance as accurate reproduction or expressive deviation to the open-ended exploration of a specific set of possibilities delineated by an instrument-composition.

Collectively and cumulatively, these properties destabilize established notions of what it means to play and learn a musical instrument. In particular, the notion of instrumental mastery is challenged. “Instrumental mastery” refers to the development, typically over an extended period of time, of the skills required to play an instrument. Conventional understandings of mastery tend to focus on the technical motor abilities and the physical dexterity required to accurately and consistently produce specific musical outcomes. This physical bias is rooted in the nature of the acoustic performer-instrument relationship. For instance, most experienced musicians do not primarily rely on their eyes and ears to navigate the interface of their instrument (even if these play some role in navigation). The musicians instead utilize the subtle haptic feedback that results from the close coupling between performance interface and sound-generation mechanism [4]. This feedback has two functions. Moment to moment, it allows the performer to ascertain the state of the instrument and subtly adjust his or her actions to suit. Additionally, over time, the “feel” of the instrument as it responds to different input gestures becomes internalized in body memory.

The performer-instrument interactions in Tudor’s live electronics are quite different from those of the acoustic domain. For instance, rather than gestural input being transferred to the means of sound generation by a performance interface, the performer influences the sound-generation circuit far more directly. This influence includes adjusting potentiometers but also includes touching exposed parts of the circuit itself. Both actions result in notably little performance spectacle. Additionally, like the sounds produced by many electronic instruments, the sounds produced by the Tudor circuits are diffused externally, by loudspeaker or transducer. Without acoustic vibrations at the point of performer-instrument contact to provide haptic feedback, the performer must instead rely on aural cues to grok the response of the instrument. However, this aural turn in feedback modality significantly blurs the clarity of feedback. For instance, while haptic feedback is localized by the performance interface, the auditory environment is comparatively expansive, loosely bounded and already crowded (by the musical output of the instrument, environmental sounds, and so on). This blurred feedback, in a context where interaction is already based more on loose influence than tight causality, leads to considerable navigational difficulties for the performer.

It is clear that these peculiarly Tudorian characteristics require a reformulation of instrumental mastery. In particular, rather than understanding mastery as an increasingly sophisticated physical manipulation of a consistent acoustic object, we must instead see mastery as the ephemeral aural and mental skills required to process the acoustic environment and intelligently translate it into abstract gestural response. It must also embrace a kind of learned “letting go”:

an acceptance that the instrument’s response may never be entirely knowable and that the instrument itself may change over time in ways hitherto unimagined.

Although Tudor resisted the use of computers in his own work, these ideas based on his work are pertinent to the musical use of computers today. For instance, K. Cascone [5] remarks that audiences struggle to adapt to the minimal gestural spectacle of laptop music. More relevant still is S. Jordà’s [6] comment that planned obsolescence and the tendency to endlessly upgrade have meant that few players of digital musical instruments have reached the level of virtuosity. However, perhaps instead it is our notion of virtuosity that needs to be adjusted; a better understanding of Tudor’s work provides one possible basis for this.

## References

- 1 P. Manning, *Electronic and Computer Music* (New York: Oxford Univ. Press, 2004) pp. 4–6.
- 2 Manning [1] pp. 19–74.
- 3 D. Holzer, (2011) “Schematic as Score: Uses and Abuses of the (In) Deterministic Possibilities of Sound Technology,” *Vague Terrain 19: Schematic as Score*, accessed 20 December 2015, <[www.web.archive.org/web/20150227025105/http://vagueterrain.net/journal19](http://www.web.archive.org/web/20150227025105/http://vagueterrain.net/journal19)>.
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## FROM YOU TO ME AND BACK AGAIN: INTERDEPENDENT LISTENING AND THE RELATIONAL AESTHETICS OF SOUND

Julian Day

**ABSTRACT** This article outlines a mode of contemporary performance based on “interdependent listening.” Interdependent listening involves creating performative feedback loops in which players respond directly to the sounds they hear others make. Most ensembles deploy such listening to some extent; however, the distinction between general ensemble playing and interdependent listening is structural, describing situations in which the interdependence generates the content. This socially driven approach can be observed historically in works by Christian Wolff, Cornelius Cardew and Pauline Oliveros and underpins recent works by the author of this article, particularly within the project Super Critical Mass. In Super Critical Mass events, temporary communities use homogeneous sound sources to create works whose structures evolve from the performers’ interconnections.

In a small gallery in Linz, five people stand blindfolded. Their faces strain as they sing a note almost—but not quite—together, their attempt to synchronize compromised by growing fatigue and uncertainty. This performance and video work, *Five Studies in Unison* (2014–2015) (Fig. 1), challenges a group of strangers to undertake tasks (such as “sing and maintain a single high note for an hour”) that force them to listen and act as a group. One can map the changes in their social relationships as the piece progresses: What begins as a stark unison gradually blurs into a wavering pitch band centered only loosely on their opening high G.

The structure of *Five Studies* evolves according to the way the performers’ bodies relate to one another through an enhanced mode of listening. I have named this process “interdependent listening.” Interdependent listening describes a situation in which the act of listening directly influences one’s decisions as a performer. I listen to your sound—this informs my response; my sound then informs yours. Together we build an intimate dialogue based on call and response. If we aim for consensus, then over time our actions will loop and entrain: Listening becomes amplification, a self-reinforcing phenomenon.

Such listening, of course, occurs to some extent in almost all ensemble playing. Even fully notated canonical works, fixed in many regards, typically demand highly attuned listening to unify balance, pitching, cueing and rhythm. When performers blithely saw away at a Beethoven string quartet, an intriguing conceptual scenario may result, but if the performers do not listen closely to one another, their performance will be far from traditional. Complex ensembles such as orchestras must deploy additional modes of speculative and anticipatory listening to allow for the vagaries of space and the inevitable temporal lag between the players that are farthest apart from one other.

The distinction, then, between general ensemble listening and interdependent listening is structural. Within the latter, one can only determine what sound to make and when to make it, by responding to what others do. Interdependent listening is a social practice in which the communication process directly dictates the evolution of the work. An obvious example is group improvisation, in which abstract dialogue and texture takes priority over predetermined structure. Ensembles such as the Splinter and Splitter orchestras depend on continual negotiation among players, and the players accept that the linear progression of each piece hinges on each performer listening carefully and offering subsequent input. Such circular listening forms a highly active, even turbulent, state in which the outcome remains continually unknowable. In contrast, in the performance of a classical piece, listening is vital but does not radically alter the form of the composition.

Interdependent listening is central to much of my recent



Fig. 1. *Five Studies in Unison* (2014–15), video still, bb15 Linz. (© Julian Day)

work. *Five Studies* echoes *Vocal Field* (2012), a work created with my colleague Luke Jaaniste [1] within our ongoing project Super Critical Mass. In *Vocal Field*, 50 vocalists stand throughout the unusually wide knave of Manchester Cathedral (U.K.), forming an equally dispersed grid within which listeners can wander. The group follows a set of simple verbal instructions to create a 45-minute sonic state, given only a general contour with no specific pitches. The performers are untrained and have their eyes closed, making them highly susceptible to following one another’s pitches. This dependence is nonetheless complicated by the fact that each performer is separated from the others by several meters. This separation results in smaller zones of interdependence within the overall mass, yielding a dynamic relationship between these two scales of ensemble—the performers relying on both the architecture and their evolving social relations to determine their next moves. Although they have not been specifically asked to entrain, the singers naturally synchronize in and out: Across the duration of the performance, the harmony shifts from unisons and open intervals to jazz-inflected chords and clusters reminiscent of Gyorgy Ligeti’s *Requiem*.

The role of the audience here may also be considered interdependent in that their mobile flow throughout the cathedral alters the social density within the space and further complicates the performers’ already fragile communication. Furthermore, the listeners choose where to locate themselves and have great agency in how they perceive their linear reading of the piece. Nonetheless, their impact on the structure remains relatively minimal and might be termed “dependent listening.”

Works such as *Five Studies* and *Vocal Field* rely on the fundamentally social nature of sound as a means to explore relationships in space. As Brandon LaBelle notes in his introduction to *Background Noise*, “Sound is intrinsically and unignorably relational . . . the acoustical event is also a social one. . . . Listening is thus a form of participation in the sharing of a sound event” [2]. Making sound is an intimate and gestural form of communication. When we make sound, we externalize our intentions and both intermingle and intervene with others in our realm. The body acts as a vessel through which to understand physical and cultural means of occupying space and relating to others within it.

My overall research is developing into a form of “rela-

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**Fig. 2.** Super Critical Mass, *AURA* (2012), performance still, Blacktown Arts Centre. (© Julian Day and Luke Jaaniste. Photo: Alex Wisser.)

tional aesthetics through sound,” a theoretical framework of how abstract sound might structure forms of community. It traces a lineage of composers who have used interpersonal dynamics and performative exchange as a substrate, including Christian Wolff, Cornelius Cardew and Pauline Oliveros. My work echoes two particular precedents: Paragraph 7 of Cardew’s *The Great Learning* (1968–70), which requires a diverse group of players to listen intently and mimic one another’s pitches, and Oliveros’s *Sonic Meditations* (1974), in which performers must similarly converge through listening, a process described by William Osborne as “empathic resonance” [3].

Interdependent listening requires active listening [4] and sounding. The listener is participant and performer, recalling Lawrence English’s notion of “relational listening” [5]. English positions this within the field of phonology, centering on the listener and the extent of the listener’s individual acoustic arena. In contrast, interdependent listening suggests a “relational *sounding*” in which structures are enacted through interlinked actions within groups of people. Interdependent listening does not stop at the ears or the brain: It requires subsequent actions that respond to input, instigating an intelligent feedback loop. It reframes relational aesthetics through sound, viewing the aural as an invisible interconnection between agents.

Interdependent listening underpins the Super Critical Mass project [6]. This project acts as a methodological framework within which to construct and examine forms of community through processes of active listening and sounding. Temporary communities create immersive situations in public places (streets, churches, malls, galleries) using dispersed homogeneous sound. Like Cardew’s Scratch Orchestra, the project presents a force that is “oppositional” [7] to more traditional forms of ensemble, developing scenarios in which the mass dictates the overall structure of the event through their interlinked behavior. The aural results develop through the principle of emergence: a complex gestalt born of smaller, independent processes.

Each ensemble is composed of identical sound sources, establishing an equivalence between performers that heightens the role of listening. The type of sound source varies from event to event: Earlier works tend toward using musical instruments (40 saxophones, 80 flutes, 100 brass instruments) while more recent events feature common objects (gold

coins, ceramic bowls, pieces of white paper), thus widening the aperture of participation significantly. The human voice has emerged as a particularly salient “instrument.” It is corporeal, and therefore fallible, and has little means of independently establishing specific pitches; a choir’s performance is therefore subject to the failures and contingencies of memory and the body. The corporeal fallibility of the human voice is especially evident in *AURA* (2012), a Super Critical Mass event involving senior singers at Blacktown Arts Centre, Sydney (Fig. 2). The capabilities of each singer—voice, body and hearing—are influenced dramatically by the aging process. Such interpersonal reliance is readily transparent: Over time, the struggles of the vocalists in Manchester, Sydney or Linz are exposed, and one may observe their shared negotiations by following the changes in pitch and texture. In this way, Super Critical Mass offers a real-time sonification of human relations.

## References and Notes

- 1 *Vocal Field* was commissioned and presented at the 2012 Future-Everything festival.
- 2 Brandon LaBelle, *Background Noise: Perspectives on Sound Art* (New York: Continuum, 2006) pp. ix, x, xi.
- 3 William Osborne, “Sounding the Abyss of Otherness: Pauline Oliveros’s Deep Listening and the Sonic Meditations,” in Deborah Johnson and Wendy Oliver, eds., *Women Making Art* (New York: Lang, 2000).
- 4 See Carl Rogers’s concept of “active listening.”
- 5 See <[www.earwaveevent.org/article/relational-listening-the-politics-of-perception](http://www.earwaveevent.org/article/relational-listening-the-politics-of-perception)>.
- 6 Super Critical Mass was founded in 2007 with Janet McKay and is currently codirected with Luke Jaaniste. See <[www.supercriticalmass.com](http://www.supercriticalmass.com)>.
- 7 Virginia Anderson, “‘1968’ and the Experimental Revolution in Britain,” in B. Kutschke and B. Norton, eds., *Music and Protest in 1968* (Cambridge: Cambridge Univ. Press, 2013) p. 172.

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## THE HAPPY VALLEY BAND: CREATIVE (MIS)TRANSCRIPTION

David Kant

**ABSTRACT** In the author’s work as a composer, he explores how state-of-the-art digital sound analysis can change how we listen to music. The Happy Valley Band (HVB) is a product of this exploration and encompasses a repertoire of microtonal deconstructions of pop songs, an open-source software suite and a dedicated performing ensemble. This article documents the author’s experience and artistic practice within this project—a process of translation between digital analysis,