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"What Can Be Learned to Be Observed":

Technical and Theoretical Reflections on the *Clarke Distributions*

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Abstract

This dissertation is an in-depth exploration of *Clarke Distributions (for 10)*, an original musical composition based on the use of text to establish interrelational listening and performance patterns between performers, in place of any fixed musical material. Inspired by research into improvisation, cognition, aesthetics, and linguistics, these patterns manifest as acts of applied attention and "real-time category formation," based on a combination of the score's linguistic features and the unique capabilities of its performers.

In order to assess the work's "success" in terms of generating novel musical interactions with a salient connection to the score's instructions, two distinct realizations of the piece are analyzed, combining narrative accounts, performer interviews, and waveform analysis.

The challenges of performing the work point towards the nuances of individual and shared sensibilities when encountering works of indeterminate music. Drawing on theories by Nelson Goodman, George Lakoff, Ludwig Wittgenstein, I propose that such works can operate on our broader frameworks for sense-making as particular objects: highly flexible yet still singular "containers" of rules and concepts whose legibility through specific modes of metaphorical transfer propels a creative yet methodological process of reworking our experience of our worlds.

Through the practice of intentional manipulation of sensible categories, of which *Clarke Distributions* is used here as an exemplary case, I posit the importance of musical indeterminacy as a unique means of knowledge creation.

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The subject of this dissertation came about as part of my participation in the 2019 Westben Performer-Composer Residency; I would like to thank Ben Finley and all the residents for helping start a process I didn't know would grow so deep. Correspondingly, I would like to thank the participants in my 2022 doctoral recital for giving the piece further life, and the essential possibility of comparative analysis, after a period of this kind of music feeling like an impossible thing in the world. All performers names are listed in the first page of the introduction.

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Since this document refers to communities of practice so often, I would be remiss to not include the most profound and loving thanks to mine: the local, national, and international pluralities of friends, scholars, and artists who have made enriched my life in countless unique ways. This includes, but is in no way limited to: my colleagues in the Northwestern Composition Department for their kinship and inspiration; my bandmates of Fifth Season and Mad Myth Science for their foundational contributions to my growth in Chicago's music scene; and my comrades in NUGW for living proof of the power of collectivity.

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I. Introduction

i. The absolute basics

Clarke Distributions (for 10) (subsequently abbreviated as *CD*) is an experimental musical work for an ensemble of ten performers on any instruments or other sound sources. Consisting entirely of text, the score outlines a series of instructions for producing sounds which are solely defined in relation to given qualities of the other performers' sounds discerned through active listening. It was written for and premiered by the residents of the 2019 Westben Performer-Composer Residency in Campbellford, Ontario. Due to the COVID-19 pandemic, the next performance was not until the US premiere at Constellation (Chicago, IL) in October 2022. [1]

Despite the few realizations to date, *CD* represented a notable step forward in my compositional practice. It built upon my previous experience as an improviser and composer of verbal scores, using techniques for ensemble interaction informed by extramusical research interests in organization and cybernetics. It was the starting point for what is now an ongoing *Distributions* series of compositions, which use further composed variations in structures of attention in improvised ensembles to explore relationality and how performers individually assess musical quality. This dissertation documents the practical and theoretical results of those inquiries first raised by *CD*. Structurally, the subsequent chapters proceed outward from the individuated score elements, to the form of the composition, then finally to ideas about the operations of indeterminacy beyond the piece. These ideas are presented not as definite

[1] The Westben Centre performance can be seen at https://vimeo.com/387027677, and includes performances by The Honourable Elizabeth A. Baker, Jacinta Clusellas, Erika Dohi, Ben Finley, Iman Habibi, Nick Hon, Tova Kardonne, Alexis Lamb, Davy Sumner, and Justin Wright. The Constellation performance is the first piece performed at https://www.youtube.com/watch?v=tTPO_HGX7vY, and includes performances by Ishmael Ali, Johanna Brock, Jakob Heinemann, Jeff Kimmel, Riley Leitch, Daniel Lewis, Beth MacDonald, Julian Otis, Craig Davis Pinson, and Adam Shead.

conclusions, but are formulated as actors influencing the composition and interpretation of works in the series, in an ongoing reciprocal process of artistic research-creation. They touch upon topics including, and in approximate order:

- The effect of grammatical differences in text-based scores
- The role of metaphorical thinking in interpreting open notations
- The social-contextual nature of musical rules and instructions
- Indeterminacy's relation to musical practice as Wittgensteinian "forms of life"
- Ontological approaches to open works drawing upon practice and metaphor
- Musical indeterminacy's broader implications for sense- and knowledge-making

ii. On openness and analysis

CD poses significant challenges to traditional analytic techniques due to a lack of conventional notation and conventional structural hierarchies. Such challenges, however, are not new: since the mid 20th-century, variable musical forms have been called indeterminate, improvised, mobile, aleatoric, stochastic, among many terms, first summarized by Umberto Eco as "open works", which "are brought to their conclusion by the performer at the same time as he experiences them on an aesthetic plane".[2] While "indeterminacy" appears to have obtained the lead position as a relatively colloquial summary of these forms, Sabine Feisst notes that their histories and use demarcate particular aesthetic strategies and affiliations manifested in these competing terms.[3] As used by the composers themselves and subsequent discourse, each poses

[2] Umberto Eco, *The Open Work* (Cambridge, Mass: Harvard University Press, 1989), 3.
[3] Sabine Feisst, "Negotiating Freedom and Control in Composition: Improvisation and Its Offshoots, 1950-1980," in *The Oxford Handbook of Critical Improvisation Studies*, ed. George Lewis and Benjamin Piekut, Oxford Handbooks (New York, N.Y. ; Oxford, U.K: Oxford University Press, 2016), 208.

certain limitations along with its possibilities: for instance, the composer-specified operations of choice within the aleatoric scores of Pierre Boulez have very different implications for agency and interpretation than John Cage's attempts to remove choice with respect to elements of composition and performance. In another attempt to summarize these trends, musicologist Thomas DeLio offers perhaps the most broadly applicable term to typify such musics: a work is open, or possesses an open structure "if it presents no single fixed view of reality but instead reinforces those variable conditions under which each unique consciousness becomes manifest."[4] DeLio's definition broadens the scope of possibilities for musical events presented by Eco's definition, and decenters any one prime cause of openness. Its emphasis on openness as a state of variability defines the challenges, and potential, of open works by displacing both a definite, unitary object (the work as a set of definite sounds) and its predicated structure for connecting sound to the expression of a single subject (the composer). In a response to DeLio's work, Herman Sabbe subsequently articulates a model for the critique of open works on the grounds of this very displacement: "How rich is the model as a source for multiple implementation?"[5] Acknowledging musical multiplicity becomes the central question of such analysis. Paolo De Asis (after Deleuze), directly addresses the nature of such multiplicities: they "specify *the structure of spaces of possibilities*, which, in turn, offer an explanation for the regularities and inconsistencies in the morphogenetic processes, and in the concrete, material actualisations of the individual singularities."[6] Asis' use of the term 'spaces', in connection to shaping processes and actualizations, indicates that such a conception of movement and bounds for ineffable possibility

[4] Thomas DeLio, *Circumscribing the Open Universe* (Lanham, MD: University Press of America, 1984), 2.
[5] Herman Sabbe, "Open Structure and the Problem of Criticism: Reflections on DeLio's Circumscribing the Open Universe," *Perspectives of New Music* 27, no. 1 (1989): 315.
[6] Paulo de Assis, "Virtual Works—Actual Things," in *Logic of Experimentation* (Leuven University Press, 2018), 60.

is not merely metaphorical in an abstract, poetic sense, but is concretely metaphorical in the sense that it provides a more precise framework for the extension of conceptual thinking.

Because of this underlying spatial framework, and its connotative connections to DeLio's open structures, I will typically refer to 'open' music (musical openness, etc.) when subsequently referring to *CD* and related works and practices otherwise colloquially referred to as indeterminate. Used as such, openness points towards not only the role of performer choice as stated by Eco, but the aforementioned space of possibilities an open work may render: the morphogenesis within which traverses conceptual spaces identifiable as "points," "paths", "lines", or "spectrums".

Who does such traversing? In David Clarke's account of analyzing indeterminacy, the multiplicity of musical openness entails a "radical" shift in the articulation of musical work done: The key qualities of the "total musical fact" presented by such works emerge from the necessary labors of composers, performers, and listeners in analyzing and articulating.[7] Each perspective obviously carries its own particular priorities and biases—composers used to be assumed to be privileged the complete understanding of their own works, but such assumptions are now explicitly untenable. Such understandings are now shared with those constructed in performance, and accordingly a number of studies of indeterminate works now proceed from a performance-based perspective. Philip Thomas places the greatest analytical salience on performers based on his own experience of interpretation: "the possibilities they include and those that they exclude and the methodology behind those choices…must form the basis for further study."[8] Beyond

[7] David Clarke, "Musical Indeterminacy and Its Implications for Music Analysis: The Case of Cage's Solo for Piano," *Music Theory and Analysis (MTA)* 3, no. 2 (October 20, 2016): 193.
[8] Philip Thomas, "Understanding Indeterminate Music through Performance: Cage's Solo for Piano," *Twentieth-Century Music* 10, no. 1 (March 2013): 92.

performers' perspectives, musicologist Judith Lochhead also notes that studying performances "will provide access to the sounds of the piece in ways the score can not."[9] Supplementary to the perceptual realities of the sounds as delivered by performers, this access may include discursive, institutional, or practical factors of context. These are typically consigned to the "extramusical," but are still part of Clarke's "total musical fact", as what Adam Harper calls "non-sonic variables" affecting all possible musical events.[10] Because understanding these factors requires acknowledging this possibility (i.e. what could happen as much as what actually happened), *multiple* performances are required for a thorough understanding. As Alan Tormey notes regarding indeterminate works, they cannot "be identified by recovering a score from a single performance since it would be impossible to determine, just by examining the notational reconstruction of the performance, which elements were essential to its being a genuine instance of that work and which were merely consistent with the programmed latitudes of instantiation."[11]

An affirmative, reparative response to the inherent inability to grasp the totality of openness at a singular point characterizes the expansive methods mentioned above. Analysis no longer only takes place at the endpoint of a performance's reception, but is explicitly embedded in all parts of the musical process of an indeterminate work, itself now situated within larger networks of practice and discourse. Following this shift, and with the above conditions in mind, I seek to align my analytic work here within five "aspirational goals for productive music analysis" proposed by Lochhead:

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[9] Judith Lochhead, "Visualizing the Music Object," in *Postphenomenology: A Critical Companion to Ihde*, ed. Evan Selinger, SUNY Series in the Philosophy of the Social Sciences (Albany: State University of New York Press, 2006), 81.

[10] Clarke's use of the term is in reference to Nattiez, and also references Stephen Attinello's claims that nothing related to an indeterminate work can be considered 'extramusical. For more on non-sonic variables as a term, see Adam Harper, *Infinite Music: Imagining the next Millennium of Human Music-Making* (Ropley: Zero, 2011), 24.

[11] Alan Tormey, "Indeterminacy And Identity In Art," *The Monist* 58, no. 2 (1974): 207.

> "1) it focuses on particular musical works, interrogates them as sound, and takes account of the various ways they make musical sense; 2) it generates new forms of musical behavior—be it listening, performing or creating; 3) it queries the conceptual, cultural, and historical factors that shape our engagements with musical works; 4) it explores the reflexivity between sensation and concept; and 5) it affects the nature of our experiential engagements with musical works and with music generally."[12]

Lochhead's goals, especially the fourth and fifth, center the processes by which we analyze not just objects but experiences of music. They establish a more general goal for analysis as revealing a particular set of forms and circumstances, unique to what is studied, through which sense is generate and directed. In accounting for this sense, the analysist's own openness comes about as well through an expansion of their attentions, reflexively taking note of what guides their thought as a feature of the analyzed music. Drawing attention to this movement of experience as such is the prime qualification for art as a form of knowledge production, according to John Dewey, and couched specifically in thinking as *processes.*[13] Musical openness' function as an agent of research, thus, cannot be underlooked, for its contributions to the conception of such processes.

For this dissertation, such research-via-analysis will emulate the movements mentioned above: where compositional qualities are concerned, *CD's* two structural 'registers' of sounds and form will be taken into account, interspersed with retrospective observations and recollections. They are followed by theoretical sites "beyond" the work in which various discourses will be brought into proximity or conversation around and upon it. This movement is meant to keep a self-conscious account of experience foregrounded throughout the document,

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[12] Judith Irene Lochhead, *Reconceiving Structure in Contemporary Music: New Tools in Music Theory and Analysis*, Routledge Studies in Music Theory 2 (New York: Routledge, 2016), 8.
[13] Mary Jane Jacob, "Experience As Thinking," in *Art As A Thinking Process: Visual Forms Of Knowledge* (Berlin: Sternberg [u.a.], 2013), 100-104.

bearing a family resemblance the processes which take place in the score. This not only enhances the understanding and appreciation for *CD* itself, but for the wider possibilities of musical openness' rendering of indeterminacy as something not opposed to thinking, but essential to it.

II. Content: What Is Distributed, and Where and How?

i. Origin points

The idea of the "Distributions" series first came about after I encountered *Distributed Creativity: Collaboration And Improvisation In Contemporary Music,* edited by Eric Clarke and Mark Dorffman. In an early chapter, Clarke and Adam Linson establish an 'ecological' framework for group creativity invoking several levels of interaction: between the sensory interfaces of individuals (or embodiment), between an individual and their environment, and between a group and its social/historical/cultural context.[14] They go on to state how in (free) improvised music contexts, "the guiding principles or constraints may be primarily concerned with the kinds of interactions between players…and they can respond or interact in a variety of ways, resulting in a set of dynamic interrelationships that constitutes the collaborative performance."[15] They go on to describe the role of attention in shaping these principles, noting how group musical creation relies on shared yet diverging perspectives regarding the totality of the performance situation: personal, environmental, notational, historical, and other novel developments.

This totality relates to a second kind of distribution that reinforced the importance of Clarke & Linson's writing: the "distribution of the sensible" as outlined by political philosopher Jacques Ranciere. Such a distribution, for Ranciere, "establishes at one and the same time something common that is shared and exclusive parts [sic]. This apportionment of parts and

[14] Adam Linson and Eric F. Clarke, "Distributed Cognition, Ecological Theory and Group Improvisation," in *Distributed Creativity: Collaboration and Improvisation in Contemporary Music*, ed. Eric F. Clarke and Mark Doffman (Oxford University Press, 2017), 55.
[15] Ibid, 57-58.

positions is based on a distribution of spaces, times, and forms of activity that determines the very manner in which something in common lends itself to participation and in what way various individuals have a part in this distribution."[16] As applied to musical creation, it means that those involved have developed (in their social-aesthetic contexts, shared or otherwise) particular abilities to access, and thus affect, the shared musical situation. Especially in improvisation, this distribution is most immediately perceivable in terms of a player's conception of their available technical, emotional, or social resources that continue to make the music legible as a discrete phenomenon established together: a piece, a performance, a style, a feeling, or similar categories.

But this concept is not restricted to strictly free improvisation. David Behrman notes that composers working with alternative or indeterminate notation may work with the psychological capacities of players in a similar way: "In leaving the player free to make decisions about one element, the composer is directing a psychological measure at him in hopes of making him think twice about what he is doing…in effect, what sort of music it is that he is playing."[17] Such situations resemble the dynamics of free improvisation wherein the cognitive load of attention runs up against performers' capacities, requiring what Clarke & Linson call a 'filtering' process of information. Depending on the musical situation, this selective filtering may be reinforced by various techniques related to composition and notation to exceed the 'storage' limits for information solely formed by cognitive immediacies. Besides mitigating undesired developments, such limitation can be, of course, profoundly creative: per arts philosopher Nelson Goodman, the "weighting" and selection of particular qualities are fundamental to our means of

[16] Jacques Rancière, *The Politics of Aesthetics: The Distribution of the Sensible*, Pbk. ed (London ; New York: Continuum, 2006), 12.
[17] David Behrman, "What Indeterminate Notation Determines," *Perspectives of New Music* 3, no. 2 (1965): 63.

creating meaningful systems of knowledge, in which "comprehension and creation go on together".[18]

In light of these conclusions, I decided to focus specifically on the role of attention, and how 'compositional' interventions on sensible priorities may affect it in lieu of traditional musical material. Such interventions are not entirely novel developments. Acts of listening and attention are integral to the operations of musical openness from its onset, though Thomas DeLio cites Christian Wolff as one of the first composers to explicitly engage with strategies for interaction in works from the early 1960s. In such works the parametrization of particular sound and performance elements, independent from the possible results, was a key device for making rationalized yet creative decisions out of the variety of immediate experience.[19] By transferring and applying broadly applicable shapes and concepts of composing with sound, structures of attention could be created and worked with. I was curious about how isolating elements of sound-making/music-making, and creating specific forms of attention, could test or reveal the interrelational conditions Clarke and Linson otherwise only vaguely alluded to in their writing. In this way, such organized 'distributions' of attention in an ensemble context could offer its own influence and act as a particular agent of change. The key question became, "to what degree can a structure of attention not only produce novel, meaningful interactions in an ensemble, but have its particular effect be recognized as such?"

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[18] Nelson Goodman, *Ways of Worldmaking* (Indianapolis, Ind: Hackett, 1995), 22.

[19] Thomas DeLio, *Circumscribing the Open Universe*, 5. I cite DeLio here inasmuch as Wolff's work *explicitly foregrounds* interpersonal engagement as fundamental to the operation of works such as *For One, Two, Or Three Performers*. DeLio's purview of musical openness, it must be said, concerns a fairly demarcated conception of "composed" musical works, and does not touch on similar conceptions of musicalization and parametrization of events occurring at the same time, perhaps most relevantly amongst early Fluxus composers, as described in Liz Kotz, "Post-Cagean Aesthetics and the 'Event' Score," *October* 95 (January 1, 2001): 68-70.

Clarke Distributions (for 10)

Ben Zucker (2019)

~Each box's syntax is roughly as follows: [perscribed gesture(s): playing quality to be manipulated : direct or inverse relation to another performer's quality (extra information)]
~Move through boxes left to right. The ensemble will not always be coordinated in terms of progressing through. When you reach the end, go back to the beginning or reverse direction.
~The piece's duration is collectively agreed upon beforehand, either in terms of clock time (minutes), or number of passes through each player's sequence.
~Sounds may consist of any amount of tone (pitch) or noise, except where indicated. Short sounds should be 3-5 seconds. Long sounds should be 10+ seconds, or a full breath.
~Where obvious correlates between qualities may be lacking, parentheses supply a general spectrum to work on. Direct relations connect the first term of each parentheses. Inverse relations connect the first to second, and vice versa.
~Parameters not indicated in a box are left up to the performer's choice and discretion. Only proceed with a sound when you are fully aware of your parameters and how to interact.

1 ( )	One long sound: Your volume Inverse relation to Global volume (Smooth transitions)	Three soft long sounds: Pitch movement (down/up) Direct relation to P10 volume (soft/loud)	One long noise: Your volume Direct relation to P2 volume (Smooth transitions)	One long tone: Your volume Direct relation to P9 volume (Smooth transitions)	Trill soft long tone (previous pitch + another): Trill speed (slow/fast) Inverse relation to P3 volume (soft/loud) (Abrupt transitions)	4 soft short sets of 3 tones: Interval width (wide/close) Inverse relation to P3 timbre (dark/bright) (uneven silences)	4 soft short sets of 3 tones: Interval width (wide/close) Inverse relation to P3 timbre (dark/bright) (uneven silences)	Three long sounds, grow soft to loud: Amount of noise (noise/tone) Inverse relation to Global volume (soft/loud) (Abrupt transitions)	One loud long noise silence for two breaths, then 3 short tones: Timbre thickness (air/full) Direct relation to P6 volume (abrupt transitions)
2 ( )	One long sound: Your volume Direct relation to P1 volume (Abrupt transitions)	One long sound: Your volume Inverse relation to Global volume (Smooth transitions)	Five short soft tones: Your timbre (bright/dark) Direct relation to P1 volume (soft/loud) (uneven silences)	One long tone: Your volume Inverse relation to P6 volume (Abrupt transitions)	One soft long sound: Amount of noise (noise/tone) Direct relation to P7 timbre (bright/dark) (Smooth transitions)	Alternate two short noises: Alternation speed (slow/fast) Inverse relation to P5 pitch height (low/high) (Smooth transition)	Constant soft short noises: Playing density (sparse/busy) Direct relation to global noisiness (tone/noise) (Abrupt transitions) Proceed after 3 breaths	Pulsed soft sound changing from noise to tone Your tempo (slow/fast) Direct relation to P4 playing density (sparse/busy) (Smooth transitions) Proceed when change complete	Three soft long tones, moving up in register Pitch movement (small/large) Direct relation to P1 timbre (dark/bright)
3 ( )	One long sound: Your volume Direct relation to Global volume (Abrupt transitions)	Three soft long sounds: Pitch movement (down/up) Direct relation to P8 volume (soft/loud)	Five short noises: Your volume Inverse relation to P5 volume (equal silences)	One long tone: Your volume Inverse relation to P10 volume (Smooth transitions)	Alternate short tone (previous pitch) & noise: Alternation speed (slow/fast) Direct relation to P8 pitch height (low/high) (Smooth transitions)	Five short soft sounds: Amount of noise (noise/tone) Direct relation to P10 volume (soft/loud) (even silences, wide intervals)	2 long noises, soft then loud: Timbre difference between each (same/different) Inverse relation to P4 volume.	Alternate soft short tone & a previous noise: Alternation speed (slow/fast) Direct relation to P9 pitch height (low/high) (Smooth transitions)	Five short noises: Your volume Inverse relation to Global volume (equal silences)
4 ( )	One long sound: Your volume Direct relation to P3 volume (Smooth transitions)	One long sound: Your volume Inverse relation to Global volume (Smooth transitions)	7 soft short pairs of tones: Interval width (wide/close) Inverse relation to P3 volume (soft/loud) (even silences)	One long tone: Your volume Direct relation to P3 volume (Smooth transitions)	One short loud tone, then one soft long noise: Silence between (short/long) Direct relation to P1 trill interval width (small/large)	Pulse one soft noise: Your tempo Direct relation to P5 volume (Smooth transitions) Proceed after 3 breaths	One long noise, from soft to loud: Rate of volume increase Direct relation to P3 volume (Smooth transitions)	Pulsed sound changing from noise to tone, loud to soft Your tempo Direct relation to P1 volume (Smooth transitions) Proceed when change complete	One soft long tone: Pitch variation amount Direct relation to P6 volume (Smooth transitions)
5 ( )	One long sound: Your volume Inverse relation to P8 volume (Smooth transitions)	One long noise: Your volume Inverse relation to P7 volume (Abrupt transitions)	Slowly pulse one tone: Your volume Direct relation to P7 volume (Smooth transitions) Proceed after 3 breaths	One long tone: Your volume Direct relation to P4 volume (Abrupt transitions)	Three soft long tones Pitch movement (down/up) Direct relation to P10 volume (soft/loud)	One long tone, sliding downward: Slide rate (slow/fast) Inverse relation to Global volume (Abrupt transitions)	Five short sounds, very low register: Your volume Direct relation to P8 density of sound (Abrupt transitions)	Constant soft short noises: Register height (low/high) Inverse relation to P1 playing density (Abrupt transitions) Proceed with another player	Pulsed soft sound changing from noise to tone: Your tempo (slow/fast) Inverse relation to P2 register (low/high) (Smooth transitions) Proceed when change complete
6 ( )	One long sound: Your volume Inverse relation to Global volume (Abrupt transitions)	Three soft long sounds: Pitch movement (down/up) Inverse relation to Global volume (loud/soft)	One long noise: Your volume Direct relation to P9 volume (Abrupt transitions)	One long tone: Your volume Direct relation to Global volume (Smooth transitions)	Trill soft long tone (previous pitch + another): Interval width (small/large) Direct relation to P5 register (low/high)	7 soft short pairs of high then low tones: Silences between (short/long) Direct relation to Global register width (thin/wide)	One medium-loud long pair of tones, pitches from one of previous pairs: Timbre variation (low/high) Inverse relation to P2 timbre (bright/dark) (Smooth transitions)	One short soft sound, surrounded by even silences: Silence length (short/long) Direct relation to P4 volume (soft/loud)	Four soft short tones: Pitch movement (down/up) Direct relation to P9 volume (soft/loud)
7 ( )	Pulse one soft noise: Your tempo Inverse relation to Global volume (Smooth transitions) Proceed after 3 breaths	One long noise: Your volume Inverse relation to P4 volume (Abrupt transitions)	One long tone, then one long noise: Silence between (long/short) Direct relation to P3 volume (soft/loud)	One long tone: Your volume Direct relation to P5 volume (Smooth transitions)	Four short loud noises: Timbre difference (different/same) Direct relation to P9 volume (loud/soft) (equal silences)	Repeat previous four short noises precisely (timing +timbre): Your volume Direct relation to P2 volume	Constant soft short noises: Playing density (sparse/thick) Inverse relation to P1 playing density (Smooth transitions) Proceed with another player	One long soft noise: Timbre change rate (slow/fast) Inverse relation to P5 register (low/high) (Smooth transitions)	Trill soft long tone: Trill interval (small/large) Direct relation to P3 volume (tone/noise) (Abrupt transitions)
8 ( )	One long sound: Your volume Direct relation to Global volume (Smooth transitions)	One long tone, then one long noise: Silence between them Inverse relation to P6 pitch height	Three soft long sounds: Amount of noise Inverse relation to Global volume (Smooth transitions)	One long tone: Your volume Inverse relation to P1 volume (Abrupt transitions)	Trill soft long tone (previous pitch + another): Trill speed (slow/fast) Inverse relation to P9 volume (soft/loud) (Smooth transitions)	Trill soft long tone (new pitches): Trill interval (small/large) Direct relation to P3 noisiness (tone/noise) (Abrupt transitions)	Soft noise pulse: Your tempo Inverse relation to Global volume (Abrupt transitions) Proceed after 3 breaths	Alternate two short noises, loud and soft: Change speed (slow/fast) Direct relation to P4 volume (low/high) (Abrupt transitions) Proceed after 5 transitions	4 soft short pairs of tone and noise: Silence between (short/long) Inverse relation to Global timbre (dark/bright)
9 ( )	Pulse one soft noise: Your tempo Direct relation to Global volume (Smooth transitions) Proceed after 3 breaths	One long noise: Your volume Direct relation to P2 volume (Abrupt transitions)	Three soft long sounds: Amount of noise (noise/tone) Direct relation to P1 timbre (bright/dark) (Smooth transitions)	One long tone: Your volume Direct relation to P7 volume (Smooth transitions)	One long tone, sliding downward: Your volume Direct relation to Global volume (Smooth transitions)	One short loud tone, then immediately one long noise: Noise volume (soft/loud) Inverse relation to P3 pitch height (low/high)	Alternate soft short tone (previous pitch) & noise: Alternation speed (slow/fast) Inverse relation to P6 pitch height low/high) (Smooth transitions)	Constant soft tones, moving throughout low register Tone rate (slow/fast) Inverse relation to P8 volume (soft/loud) (Abrupt transitions) Proceed with another player	One long tone, sliding upward: Your volume Direct relation to Global volume (Smooth transitions)
10 ( )	One long sound: Your volume Inverse relation to P6 volume (Abrupt transitions)	One long sound, then one long noise: Silence between them Direct relation to P1 pitch height	Pulse one soft noise: Your tempo Direct relation to Global volume (Smooth transitions) Proceed after 3 breaths	One long tone: Your volume Inverse relation to P8 volume (Smooth transitions)	Alternate soft short tone (previous pitch) & noise: Alternation speed (slow/fast) Inverse relation to P9 pitch height (low/high) (Smooth transition)	One long noise: Your volume Direct relation to Global volume (Abrupt transitions)	2 soft long sets of 2 tones: Pitch height (low/high) Inverse relation to P2 playing density (sparse/busy)	Constant soft short noises: Playing density (sparse/busy) Inverse relation to P4 playing density (Abrupt transitions) Proceed after 4 transitions	Three soft long tones, moving up in register: Noisiness (tone/noise) Direct relation to P2 register (low/high) (Smooth transitions)

Fig. 1: Score of Clarke Distributions

ii. Towards language

To begin working through these questions, I turned to text instruction as a fundamental form of notation, following my previous use of descriptive prose in place of conventional notation to guide performances in jazz and contemporary classical settings.

(3) After the pianist has played a half-dozen chords or so, the bassist should begin playing snap pizzicato notes in the lower register of the bass. Wait until the string has stopped vibrating completely, and wait a little bit longer, before playing another note. These sounds should be fairly louder than the cymbal.The vibraphone, meanwhile, should play small bursts of rolling staccato notes, small chromatic passages.

(4) After playing a dozen notes or so, the bassist should increase the frequency of their pizzicato notes, finally reaching synchronous pulsing on one note with the drummer, microtonally inflecting the note. (Upon reaching this synchronicity, the piano and vibraphone should stop playing)

(5) Eventually, the drummer should stop playing the ride cymbal, ending with a loud strike of it. The bassist maintains the pulse, but switches to tapping the same note out col legno, moving the bow up and down the string. After a moment of not playing, the drummer should transition to playing the pulse on the closed hi-hat, a tap slightly softer than the bass. Eventually, the drummer should interject with very infrequent loud hits on the bass drum and crash cymbal simultaneously. After three of these hits, the drummer and bassist stop playing upon the fourth hit.

Fig. 2: Excerpt from "Quartet: the moths have been eating the wallpaper in Concorde" for quartet, an all-prose work by the author from 2016. [20]

This development originally arose from a desire to produce works where the long-form development of compositions could be presented in a condensed form for improvisational access, using the space of the page to emphasize the musical features I wanted most present in performance. Such works not only made long pieces more compact in terms of pages to read, but made for fewer and more engaging rehearsals due to the requisite immediacy of interpretation. Rehearsals became about creating a cohesive performance that built upon the pre-existing skills

[20] Other works include *Fifth Season* for mixed quartet (2013-2018), *Babbling & Strewing Flowers* for octet (2014), *Homotopic Songs* for large ensemble (2016), and *The Golden Age Cannot Be Picked Up* for percussion quartet (2017).

of players, allowing their interests to reinforce the gestures, textures, or performative registers that I believed were most important to the pieces. Any material that might have become distracting to read if notated was rewritten (if could become a source of inspiration) or abandoned. In some cases there was also the desire to "structurally" incorporate inspirational material beyond programmatic paratext. These sorts of goals were my priority as much or more than specific sounds, highlighting what composer Jason Noble identifies as the relation between sound and score as aesthetic in itself, rather than prioritizing sound *and only sound* as the essence and end goal of the music.[21] Implicitly, there was the desire to harness complexity in a way more directly by bringing it to the surface of my collaborator's minds while they were already engaged in the mental gymnastics of reading and playing; not just for its own sake, but to directly insert "extramusical" ideas and concepts with a technique alternative to, or in parallel with, traditional notation. The music theorist Lawrence Zbikowski explains the productivity of such an alternative as follows:

> "the kind of consciousness associated with attending to music is different from the kind of consciousness associated with attending to language. This difference reflects the different memory systems exploited by music, systems which are for the most part much more focused on the salient features of dynamic processes than on lexical knowledge or relationships between objects and events. That music should exploit such systems is a consequence of its function within human cultures, which is to provide sonic analogues for various dynamic processes that are common in human experience."[22]

An extensive use of language within music creates a situation in which these two kinds of consciousness come into productive tension, entangling dynamic processes and syntactic

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[21] Jason Noble, "Removing The Imaginary Boundary Between Score And Work: Interactive Geometrical Notation," *Proceedings of the 4th International Conference on Technologies for Music Notation and Representation*, 2018, 176.

[22] Lawrence Zbikowski, "Music, Language, and Kinds of Consciousness," in *Music and Consciousness: Philosophical, Psychological, and Cultural Perspectives*, ed. David Clarke and Eric Clarke (Oxford University Press, 2011), 190-191.

relationships into discrete structures. Such structures can be tested against a bedrock of our everyday experience of language: slight schematic interventions on the level of grammar or syntax make tangible its material structures, which draw us outside our personal logics into language's complex systems. When subsequently rendered as a score, it creates a further node upon which the material of language becomes further 'outside' ourselves, extending what Virginia Anderson, citing Nattiez' model of musical transmission, calls a "chain of poetic and esthetic processes".[23] Interpretation must disentangle the structure into action, and given the infinitely exponential increase of information even a single character change may induce, a thorough exploration takes time and precision, or may even result in what percussionist Daniel Lewis referred to as "decision paralysis" inherent in the piece.[24] When the basic structures at least appear simple, leaving a logical trace of the schematic interventions through repetitive, categorical grammars, we find ourselves with sufficient syntactical disjunction that a differential and analytical approach becomes possible.

iii. The language of the relational unit

The basic materials of *CD'*s score are a series of conjoined instructions, organized sequentially in a table (in the main score) or lists (in parts designed to facilitate individual performance). There is a generally symmetrical syntax throughout:

[23] Virginia Anderson, "The Beginning of Happiness: Approaching Scores in Graphic and Text Notation," in *Sound & Score: Essays on Sound, Score and Notation*, ed. Paulo de Assis, William Brooks, and Kathleen Coessens (Orpheus Institute, 2013), 134.
[24] Daniel Lewis, personal correspondence with author, November 3, 2022.

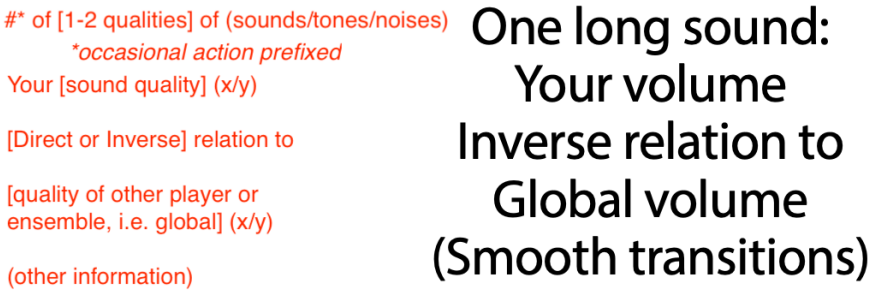

Fig. 3: 1st instructional unit from Performer 1's part, annotated

Before going into detail about how these instructions are carried out, the de-personal nature of this particular grammatical construct should be noted, and its influence on interpretation. They consist of a set of nouns modified by adjectives (one, long, your, global smooth) or nominal clauses ("inverse relation to"). Lacking a verb (with a few exceptions: trill, alternate, pulse), they most resemble "nominal groups" or "noun phrases". John Lely and James Saunders, in their landmark study of verbal scores, *Word Events*, note that the use of such constructs in these contexts achieve a form of 'strategic indeterminacy', where multiple grammatical moods (imperative, declarative, interrogative) may be viable interpretations. Likewise, Liz Kotz notes that such compressed texts within the Fluxus tradition are set up as such to offer 'maximal availability' for interpretation across a range of situations while retaining a core structural integrity as a singular aesthetic event.[25] This availability is due to the fact that being constructed without verbs, nominal group-based scores are removed from most material consideration of their realizations. In circumstances where mood could be applied, an imperative statement would call upon the reader to enact an immediate or future command ("play one long

[25] Kotz, "Post-Cagean Aesthetics and the 'Event' Score," 78.

sound"); a declarative mood ("one long sound is played") keeps temporal conditions open, but still implicates an agent involved in its fulfillment.[26]

In implicit contrast, Lely and Saunders especially note the "experiential urgency" brought about by the imperative mood which "gives priority to the performer's perceptions and actions".[27] Such urgency arguably foregrounds the enactment of the musical action as opposed to the qualities of the performer's own holistic experience, which is supplemented or subjected to an interpolative immediacy. Imperatively mooded statements may readily invoke particular moods ("do this happily"), but again, as a function of the formal grammar, effectively become functions of the notation as well, technically interpretable but serving to induce potential psychological effects within the composer's purview.

Lacking such language, the nominal groups of *CD* retain their experiential quality but set aside urgency and approach in favor of establishing their objects within an interpretive context of *encounter*. In such encounters, the objective nature of the nominal group affirms its role as a mutually co-productive agent of meaning. What Rita Felski notes of literary texts applies equally to musical instructions in terms of their non-underminable role within context: "The significance of a text is not exhausted by what it reveals or conceals about the social conditions that surround it. Rather, it is also a matter of what it makes possible in the viewer or reader—what kind of emotions it elicits, what perceptual changes it triggers, what affective bonds it calls into being."[28] Felski does not exclude the 'outside' of a text, but notes that such a dimension must be configured given the text as a central attractor. Affirming this conception of encounter in such a

[26] John Lely and James Saunders, *Word Events: Perspectives on Verbal Notation* (London; New York: Continuum, 2012): 42.
[27] Lely and Saunders, *Word Events*, 31.
[28] Rita Felski, "Context Stinks!," *New Literary History* 42, no. 4 (2011): 585.

space, Sheila Hones notes that acts of reading take place in a "geographical" dimension of interaction, in which this relational entwining expands from encounter into contextual qualities of space and time.[29] In the framework of this dimension, such qualities in musical text instructions may be assessed and determined by the reader/interpreter to a wider degree, given that the temporal demands of imperative urgency otherwise circumscribe some amount of consideration. With more time, more space may be 'explored', or co-constructed with the text, and serve as a potentially useful model of abstraction given the subsequent acts of category formation that most notably shape the instructions' enactment.

Arguably, even when the occasional imperative verb is present, the majority presence of moodless text blunts any excess influence on hasty interpretation. The overarching instruction to "Only proceed with a sound when you are fully aware of your parameters and how to interact," in fact, offers an explicit imperative in the opposite direction of time scales. [30] With more time, the processes set out by the instructions are able to unfold to a higher degree of clarity and performative insight. This has important implications on the highest structural levels of *CD*, but first may be considered regarding the content of the processes themselves.

[29] Sheila Hones, "Text as It Happens: Literary Geography," *Geography Compass* 2, no. 5 (2008): 1309-1311.
[30] Ben Zucker, *Clarke Distributions* (2019).

iv. Real-time category formation

The instructions allude to more necessary action than their condensed existence might otherwise indicate, entailing a set of mental, relational, and behavioral processes which ultimately impact a material act brought about through the encounter with the text.[31] The bulk of these processes concern the 'relation' established informing the material sound details. Each new instruction induces sudden shifts of attention that affectively re-orient performers in a way similar to what Brian Massumi refers to as "microshocks," an "instant of the affective hit" which only brings about a feeling of interruption while the content of the relation has yet to make itself clear. Yet the event of such a feeling helps makes new thinking possible because of the lack of fixity or clarity: In such moments, performers find themselves in the midst of a new space of qualitative possibility, assessing the moment for its current necessary conditions while also remaining open to further transition. Massumi writes of such moments, "To start in the middle is precisely not to perform a phenomenological reduction. It is to accept the challenge to regenerate your terms, and their cohesion to each other, at each repeated step in your thinking through the nexus."[32]

The 'regenerated terms' are sequential pairs of musical qualities, or parameters, or one related to the performer enacting the given instructions, and one related to another quality of another player (or the performance situation as a whole, when 'global' qualities are invoked[33]). It

[31] These descriptions of processes are derived from those in Systematic Functional Grammar, as laid out in Lely & Saunders, *Word Events*, 10-20.
[32] Brian Massumi and Joel McKim, "Of Microperception and Micropolitics," *Inflexions,* no. 3 (October 2009): 2-4.
[33] The use of "global" in CD is derived from Linson & Clarke, "Distributed Cognition, Ecological Theory and Group Improvisation", 59-62. At the same time, its development as a term is CD is indebted to concepts of "inner" and "outer" listening as developed by Pauline Oliveros (See Pauline Oliveros, "On Sonic Meditation", in *Software for People: Collected Writings 1963-80*, Second Edition (Kingston, NY: Pauline Oliveros Publications, 2015).

calls for acts of category formation in real time, incorporating applied listening, self-knowledge, and imagination. The performer must:

- focus their attention on the given parameters
- delineate a range of possible manifestations for each parameter, with actual or theoretical limits along a single dimension or spectrum,
- establish the position of the external quality listened for on this spectrum
- establish the possible corresponding position of the performer's own (internal) quality in its corresponding dimension
    - this position is also affected by the score's indication of approaching a limit of similar degree ("direct relation") or opposite ("inverse relation")
- use this derived location to inform sound production
- re-establish the location either continuously ("smooth transitions") or suddenly and discretely ("abrupt transitions") until the sound or gesture is complete

This chain of mental action exploits the differences between linguistic and musical consciousnesses by drawing upon metaphorical models of musical thinking. By focusing on drawing a connection between the two terms, the process of *CD* bypasses issues related to whether or not musical experience is inherently understood metaphorically, instead focusing on the linguistic/extensional functions of metaphor, and what Andrew Kania refers to as an imaginative use of the musical parameter.[34] Regardless of such exactitude, the method of

[34] Andrew Kania, "An Imaginative Theory of Musical Space and Movement," *The British Journal of Aesthetics* 55, no. 2 (April 1, 2015): 157–72, https://doi.org/10.1093/aesthj/ayu100. Kania's article outlines traditional explanations and criticism of metaphorical experience of music as such, focusing on a modification based principally on the work of Roger Scruton and Walton, accounting for criticisms by Budd, Davies, and others.

metaphor as a transfer of conceptual or (mental-)image schemata between a source domain and target domain remains viable and in place.

This method is what the performer is called on to do, in line with George Lakoff's "invariance principle" for metaphor: they must coherently align their mental image or topology for each parameter as to enable a clear dynamic interrelation.[35] *CD* exploits the metaphorical transfer process by providing a pair of schemata, whose outline is provided by parenthetical word pairs, which themselves streamline a linear ordering of the parameter due the terms' prior uses: volume and pitch are typically described as high or low, timbres are referred to as bright or dark, and some parameter (amount of noise, interval) are physically exemplary labels in a way that only the transfer renders them metaphorical. The corresponding word pairs may help facilitate this process through a simple mapping of corresponding terms (determined by the use of "direct" or "inverse" in the score), but the mapping often must necessarily lead to a novel result in the particular situation of a performance: it is in fact a four-fold mapping, from performer to parameter to parameter to performer.

Such a conception is not novel or alien to musical study: a similar principle for musical perceptions of space, featuring a preservation of unidimensional equivalence for acoustics is proposed by Roger Shepard.[36] But in reaching across so many targets whose topological domains may not be immediately clear, the "imaginative" function of musical mapping comes in. Kania's 'imaginative theory' builds on Kendall Walton's theory of fictive engagement, and specifically,

[35] George Lakoff, "The Contemporary Theory of Metaphor," in *Metaphor and Thought*, ed. Andrew Ortony, 2nd ed (Cambridge [England] ; New York, NY, USA: Cambridge University Press, 1993), 212.
[36] Roger Shepard, "Structural Representations of Musical Pitch," in *The Psychology of Music*, ed. Diana Deutsch. (New York: Academic Press, 1982), 350-352 .

notes that "we use our *experience* of music as a prop, imagining various things of it." [37] Performing *CD,* it is the experience of parameters that are used as props, hearing sounds via the experience of parameter as called upon by the score, in order to facilitate the cohesion of their abstract visualization as image-schema for transfer. Depending on the listening situation, the pattern of correspondence between the domains of the parameters may not be conventionally sensible, but per Lakoff, still nevertheless invoke sufficient structures of knowledge, informed by embodied cognition and experience to build a viable association.[38]

The uniqueness and complexity of a performance of *CD* makes building these associations more than mere matter-of-fact cognition: Players are called upon to observe up to 5 other members of the ensemble, and apply the schema's range to their perceptions of the others. This creates innumerable complications: for instance, individual performers may not always be distinguishable, due to a combination of their own playing, the volume of others, and the acoustics of the performance space. In both performances of *CD*, the combination of amplified and unamplified performers resulted in some concerns about hearing and being heard, affecting players' own behavior (musical use of space, or technical adjustments to possible volume), and facilitating a wider practice of listening and use of musical space. In other cases, the qualities of a particular instrument have a significant impact. Every performer and their instrument (gear, body, tools, etc.) has a different degree of access to certain manipulations of sonic qualities: winds require certain techniques of breath, fretless strings have greater access to minute changes in tone, a synthesizer may have certain mappings and settings, most percussion is "unpitched" in conventional usage, and many other scenarios.

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[37] Kania, "An Imaginative Theory," 169.
[38] Ibid. 210.

In any case, should a performer encounter instructions they are unable to realize with some degree of immediate fluency, the ensuing incompatibilities need not lead to frustration or surrender or diminished response. Similar to how metaphorical transfer can be done to address unlike musical qualities with novel extensions, such at its best, such encounters can encourage performers to arrive at new technical understandings of their playing in order to produce satisfactory realizations of the instructions. Clarinetist Jeff Kimmel agreed with this assessment, noting that "At times the directions were confusing but I think resulted in some really interesting moments in the fabric of the whole ensemble that could not have been derived from simplified instructions."[39]

CD seeks to reveal the uniqueness of such particular moments —the terms of the challenge of regeneration, incorporating presuppositions, previous situations and knowledges. Its series of microshocks, 'distributed' amongst the ensemble, which help build a collective foundation for assessing musical qualities intersubjectively. As a particular foundation, *CD's* compositional profile is established through the accumulation of these spontaneous and practiced relations, which shape the a player's performance in a way that can make it clearly connected to the score, yet inarguably coming out of their own practice.

v. Performers in action

A post-hoc performance analysis of *CD* immediately involves the score and recording in tandem, dialogically locating a performer's actions at the crossroads of its source instruction.

[39] Jeff Kimmel, personal correspondence, November 7 2022.

Once determined, the question of the degree to which the action and instruction correspond can be approached, but not without accumulating a variety of supplementary musical details along the way.

Analysis in this (more conventional) style gives us a bigger picture of the overall sound situation: for instance, the piece opens with long sounds by all but one member of the ensemble, fluctuating in overall volume as each player's reactions to each other's volumes create a feedback loop of adjustments. In both available recordings, the timbre of this resulting sound mass is extremely heterogenous, as players and their instruments have different capabilities for sustained sound. As the instructions are at their simplest here, allowing an extensive degree of time and shared focus on a single, relatively distinct variable, players typically engage immediately, compelled to establish an ensemble presence. Depending on what sort of long sounds can be produced (wind players and vocalists may have less sustaining power than strings or electronics), the overall sound soon decreases in density, as subsequent acts of parametric response begin, and players begin to take time to carry out their increasingly complex parts.

Such post-hoc analyses, however, do not account for the key factor in these sounds, which is the players' individual choices and responses to others. Descriptions of individuals within the ensemble gives a more pertinent focus on the sound's relationship to the score:[40]

[40] Both performer name, parts, instruments, and timings correspond to the October 9, 2022 performance Frequency Series (Youtube livestream: https://www.youtube.com/watch?v=tTPO_HGX7vY).

*Fig. 4: Analysis of performance by **Riley Leitch**, performer/part 5: trombone and objects*
1:47-2:02 — Long pair of tones on two small horns — volume related to volume of Julian Otis (vocals, performer 8). Smooth rise in volume when Julian stops, but does not overtake texture—this may be a consideration of ensemble, or just a matter of how loud the horns can get.
2:56-3:18 — Long sound on trombone distorted with vinyl mute — volume inversely related to volume of Beth MacDonald (tuba, performer 7) – another, faster change in volume when Beth stops playing a low note. Some vibrato.
3:39-4:27 — Approximate E3 tone on trombone, pulsed via volume swell and slight sliding — volume related to volume of Beth again, but directly proportionate; around 4:05, towards the end of a breath he increases the sliding to make the sound more noticeable as Beth re-enters -- note on third breath is slightly lower than previous.
5:05-5:40 — Eb4 tone with harmon mute, rapid vibrato, volumes changes with hand muting techniques – volume related to volume of Jeff Kimmel (clarinet, performer 4) with distinct changes (ex. 5:38).
6:02-6:09; 6:12-6:24; 6:26-6:40 — 3 short low tones with plunger mute (free muting change)— changes of pitch related to volume of Adam Shead (percussion, performer 10) – Adam plays a very small bell in the middle of the first and second tones, leading to Riley to raise the pitch for his second tone, and for third tone (c. 6:26) Riley responds to the bell's subsequent disappearance by playing a significantly lower sound.
6:53-7:19 — Long slide downward – slide speed is based on "global"/ensemble volume, which dips considerably in the middle of his gesture -- the combination of breath and an increase in sound (especially from double bass and/or electric guitar) lead to a very quick movement downwards at the end.
7:47-8:04 - short noises on small horn with tubing — volume related to Julian's density; since he has some fairly active moments in the middle, Riley's volume increases as well as his frequency, forming a brief hocket of sounds -- Instruction calls for low register sounds, but first sound is high, likely due to unpredictability of the assembled instrument.

At this point, it occurs to me that all instrument/sound source changes have only occurred between instructions—implicitly, the grouping of sounds within instructions would seem to delineate a structure of shared qualities extending beyond those indicated, at the very least due to practical reasons, if not fundamental 'gestalt' operations of reading and interpreting.
8:23-9:07 – Clanking small horns together – approximate register is inversely related to the density of Ishmael Ali's playing (cello, performer 1) – Ishmael begins playing a constant tremolo around 8:57, which leads Riley to change the location of the bells' contact to change register – ends shortly after (I can't help but think of the abrupt ending as coming to terms with the difficulty of following the instruction with the given sound source).
9:43-10:16 – Pulsed sound using vinyl mute on trombone again – pulse rate is inversely related to register of Johanna Brock (viola/voice, Performer 2) – Johanna is quickly singing and making continuous, moderate changes of pitch, so Riley moves fairly quickly at first – when Johanna re-enters on viola, higher than her singing, Riley's last sound is elongated.
Finished—no more playing through end of piece (c. 15:00)

*Fig. 5: Analysis of performance by **Ishmael Ali**, performer/part 1: cello and percussion*
0:18-2:20: long sound (sound as bow/bells hybrid)
2:33-2:45: first long sound with pitch movement: reduced range of sliding (Adam's radio—notice in video that he stops as Adam puts radio down, slight pause before going in again) *2:56-3:17: second long sound, another sliding motion ending up lower than first* *3:27-3:50: third long sound, similar ending pitch, most vibrato at end of all*
4:04-4:10: long noise—height and technique (above-bridge bowing may mean volume is attempt at comparability, more likely, Johanna's mic position is picking her sound up more precisely. *(Note that he ends with Johanna, thus fulfilling the direct relation but not the the suggested durations for long and short sounds; the main score's grammar is more definite than the duration, which includes probable "should" leaving room for adjustment.)*

4:58-5:43: long sound—another high noise sound—note that he is watching Craig and holds off, but begins shortly before Craig does several playing gestures, with Ishmael's requisite increase in apparent volume by the end of his sound. *Before the next section, he makes a couple of visible 'false starts', about to play but refraining.*
6:15-c. 7:00: noise into tone, doesn't quite track with score, ***unless the short noise at 4:04 was internally perceived as a false start, and done again to fulfill a condition of "longness".***
7:20-8:06 (7:50, abrupt transition/speed change when Jakob plays)
8:18-8:52 — second trill, not in the score per se, but worth noting that this trill occurs WHILE his designated observee (Jakob Heinemann, bass) is playing, suggesting an aspiration to realize the parametric relationship.
9:36-10:20 —3-note sets: noise of Jakob translates to wide intervals. Jakob's silence means a very reduced range for the 4th set—where volume is concerned, silence is rarely treated as an absence of correlated quality, simple its lowest possible state. This would seem to lead from considerations of volume at the beginning of the piece and more generally.
Skips repetition of 3-note set instruction, goes to long sounds. *11:20-12:13 - bowed note with (over)pressure* *12:22-12:44 - endpin bowing* *Worth noting here that the texture has significantly thinned out by this point since he last played. Playing gestures indicate a rise in volume each time (though varying in ACTUAL volume due to variety of techniques).* *Third sound not done by time the audience breaks in, effectively ending the piece.*

Akin to the way that performers 'map' qualities per the score's instructions, this descriptive account is also a "mapping", as Lochhead uses the term for analytic purposes. For Lochead, mappings "embody the particular interests of the analyst, enact a becoming of the work through the cognitive engagements of the analyst, and inscribe the embodied position of the

analyst." Such mappings are necessarily multiple: "in the same way that some geographical region might have multiple mappings depending on the interests of the mapmaker, a musical work generates diverse mappings."[41] Here, what has been mapped are the correspondences of Riley's and Ishmael's playing to the score via a particular secondary act of listening to a recording of the performance (following the analysis done by the players in the piece itself). But through the listening utilized by this particular mapping, another set of factors make this inscribed position of the post-performance analyst apparent.

In this case, position is an extremely important factor, as the analyst literally can not hear the same way each performer did, and thus does not have the same perspective from which to assess the fulfillment of the score's instructions. The analyst is not only physically separate, but any repeat listening is mediated through recording technology, leading to a discrepancy between sounds that were present in the live performance space and their post-hoc representation accounting for microphone placement and performer gestures.

This method also remains foreclosed to the performer's interiority—their choices in the moment which make the piece possible at all. In the ideal analytic situation, performers have immediate and full recall of their thought processes underlying each gesture, but such precision may be effectively unfeasible, even if asked directly following a performance. In post-performance interviews, messages, and questionnaires done with the ensemble, not all of the decisions made could be accounted for, leaving the analyst to not only be a music theorist but an armchair psychologist. Some of these suppositions are present in the above analyses, and tend to concern assessments what considerations supplemented the given instructions or addressed

[41] Lochhead, *Reconceiving Structure In Contemporary Music*, 95.

score-following complications. These considerations raise considerable questions about the formal identity of *CD*, and the performers' relation to it. In the absence of a surplus of direct ethnographic information, other generalized concepts may provide some insight.

vi. Rule-forms, sufficiency, identity

As shown through the example of the above analyses, performers juggle a number of goals and concerns in realizing *CD*. Specific sounds are incidental to that end, inasmuch as they display the necessary qualities that align with those indicated by the score, or that they "count" as sounds produced under the purview of the instructions. Per Nicholas Wolterstorff, this entails that "act A will 'count' as act B if there is a rule that certain occurrences of A fulfill conditions to also be regarded as an instance of B."[42] Act A, in this case, would be sound-producing actions by performers, or rather, the preceding imaginative acts which utilize sounds for the conditions of act B, the categorical relation proposed by the instruction. The rule, roughly speaking, is a meta-relational metric: the actual relation of sounds to the proposed text relation; in other words, the "truth" of the score's instructions as a proposition. Such a proposition, as phrased by Wolterstorff, roughly follows the formula of "for work W, property P is essential to W at time T."[43] And such propositional rules should be understood as foundational to all notation, according to Cornelius Cardew:

> " 'Rules' and 'notation' are inextricably intermingled, and it is misleading to separate them. There never was a notation without rules-these describe the relationship between the notation and what is notated. The trouble in classical music is that so many

[42] Nicholas Wolterstorff, *Works and Worlds of Art*, Clarendon Library of Logic and Philosophy (Oxford: New York: Clarendon Press ; Oxford University Press, 1980), 203.
[43] Ibid., 89.

> of the rules are inexplicit-given by tradition, and obeyed to such an extent subconsciously that they would be difficult to formulate."[44]

Roughly formulated, conventional notation rules, through their syntactic disjointedness, typically seek to narrow the identity of a work's properties to something singularly exemplifiable, though as Benjamin Boretz notes, even these constrained thresholds are not absolutely precise as to avoid issues of compliance.[45]

In cases of musical openness, the thresholds are widened, but still typically maintain some form of boundary of apparent identity. They favor a different kind of exemplification, though, emphasizing the interplay between what Virginia Anderson calls the constative and performative aspects of the score: what the performer is called on to do in relation to the existing score elements. For this, Anderson likewise utilizes concepts for performative language: they can be assessed in terms of their potential achievability, or "happiness," dealing with rightness or wrongness rather than strictly aesthetic judgements.[46] "Happy" performances of the same work will share some sort of family resemblance based on their constative rules.

Similarly, Alan Tormey maintains that a form of rule-instantiation provides a viable way of identifying these similarities across what he calls "aleamorphic" work performances lacking any other structural isomorphism. Crucially, however, Tormey identifies "nonextensional factors" of performer belief that help underline the unstated, "regulative" rules that also underly identity: "it may be impossible without reference to beliefs, intentions and the like, to uniquely determine the identity of the work instantiated… what the players *thought* they were doing

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[44] Cornelius Cardew, "Notation: Interpretation, Etc.," *Tempo*, New Series, no. 58 (July 1, 1961): 30.
[45] Benjamin Boretz, "Nelson Goodman's Languages of Art from a Musical Point of View," *The Journal of Philosophy* 67, no. 16 (1970): 543.
[46] Anderson, "The Beginning of Happiness, "136-138".

should remain the decisive criterion for choosing among competing descriptions."[47] Such belief belies the existence of the regulative rules, the cultural contexts Anderson notes shapes the realization of unstated elements of a score, even if the realization is conceived in an oppositional spirit.[48]

CD displays a general lack of regulative rules in its score—however, given that the principle act it induces is mental in origin, any assessment of "happiness" in its given rules must take this less tangible form of ideological material into account. Implicit to the rule is to not only make the sound correspondences legible, but doing so with the belief that the rule is being followed as such, with the goal of making it 'count' in the context of the entire piece. According to Daniel Lewis, the setup of the score as a whole indicates and promotes this: "unfolding, responsive connections between players are a clear priority…each player is aware that these connections form a network of responsiveness across the ensemble… The piece is distinctive in the way a listener could zero in on the reactive changes [that] move through the ensemble, which is only possible because of the composed web of connections."[49] Implicit to the priority that Lewis identifies is that these connections provide not only the proof of the score, but are sufficient enough to determine unstated elements as well. Actions in *CD*, then, gain their coherence through the collectively determined clarity of relation: what Wolterstorff calls a series of "salient action-associations"[50] builds the ground on which *CD* can move forward specifically

[47] Tormey, "Indeterminacy In Art," 212-213.
[48] Anderson notes: "In late experimentalism, especially in Britain, performers were encouraged not to follow the composer's intention, if it did not appear in the score; fanciful, even illogical, interpretations were valued." (Anderson, "Beginnings Of Happiness", 136).
[49] Lewis, correspondence with author.
[50] Wolterstorff, *Worlds and Works of Art,* 241.

as itself, without collapsing into overly unhappy performance (that is, an unsatisfactory level of the work's salience, in which its features become secondary to the decision-making process).

These associatively salient actions are what renders *CD*'s structurally isomorphic coherence (that is, its indeterminate aleamorphism in Tormey's sense). Instead of a sound-morphological basis, its coherence is built on the interpretive capacities of its rules on varying structural levels. While the previous section demonstrated this on the level of individual units of sound and gesture, the following section shows how these rules shape the overall form of the work in such a way that infuses the wider context performance into the interactions necessary for realization.

III. Form: Moving At The "Speed Of Thought" and its consequences

i. Big pictures

With regards to the progression of events within the score, *CD's* aleamorphicism provides a great deal of flexibility, principally due to a particular directive given in the score: *Only proceed with a sound when you are fully aware of your parameters and how to interact.* In rehearsals, I refer to this as "moving at the speed of thought;" doing so is meant to free performers from external formal pressures which may otherwise affect their disposition while realizing the sounds. This is not to say that such pressures are inherently detrimental—time and expectation are fundamental elements to any processing of musical information. Composer David Behrman, in assessing the effects/affects of indeterminacy, notes that "constraining the player with too many or overly binding rules might change his mood, the spirit in which he makes his sounds, and the sound." That the opposite does so too would seem to be implicit.[51] What occurs in *CD* is a gentle upending of formal hierarchy, emphasizing an orientation towards form in which the structural units are not given shape in time, but constituted by process, and a degree of *fidelity* to the score as a set of rules or commands as previously discussed. While the score does describe certain morphological sound characteristics (namely numbers of sounds, and those sounds being generally short or long), the primary durational factor is how long a performer waits before making a sound they have determined to be satisfactorily compliant (or beyond) with their given instructions.

From an overall sonic perspective, this typically results in some amount of space and silence in *CD* performances, which is also of utility for the audience to perceive individual

[51] Behrman, "What Indeterminate Notation Determines," 61.

sounds or draw connections between them. The perception of time within performances, then, may be innumerably varied as individual listeners (audience and performers alike) encounter the score's nonteological series of events and assemble a rudimentary personal ordering, a mode of temporality Jonathan Kramer refers to as "non-directional linear time" or "biotemporality".[52] There is an overall duration, but the emphasis on relationality in the piece ultimately prioritizes the development of attention in each of the individual sections.

Because of this, performances of CD have greatly varied in duration. The world premiere of the piece at the Westben Centre for Creativity & Connection in 2019 lasted 5 minutes and 40 seconds; the US premiere at Constellation in 2022 last 13 minutes and 48 seconds. It's worthwhile to note, however, that even in rehearsals, these approximate time frames were preserved: the two recorded rehearsals from Westben are about 6'10" and 6'30, respectively. The rehearsals for the Constellation performance have recording lengths of approximately 9 minutes and 12 minutes (but have extenuating circumstances complicating their 'completion').

Besides the myriad of relational factors, the most immediate determinant of overall duration are the instructions for *Clarke Distributions* which indicate two strands of possible conditions for the piece's completion: it can end after either a predetermined amount of time, or a number of "passes" through the sequence of instructions by all performers.[53] In both concert recordings, the latter condition is used to guide the performance: a relatively simple decision for all players to proceed through the sequence of instructions once, and then stop playing; the piece being over when all involved have reached this end point.

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[52] Jonathan D. Kramer, *The Time of Music: New Meanings, New Temporalities, New Listening Strategies* (New York : London: Schirmer Books ; Collier Macmillan Publishers, 1988), 396.
[53] Zucker, *Clarke Distributions*.

ii. Within the structures

This notion of structure aligns with the explication Thomas DeLio gives in his seminal analysis of open works: "...a structure is a complex process evolving over a period of time, integrating an elaborate and diverse range of activities reaching out far beyond the framework of the art object itself. It is a continuum of activities beginning with a series of perceptions and proceeding through a network of interrelated transformations."[54] Perceptions are especially important in *CD* given the nature of instructions, and transformation are likewise made explicit as part of the score, the "framework" and ostensible "art object" which nevertheless inherently sets itself up to be exceeded. DeLio applies this notion to a study of Robert Ashley's *In Memoriam…Esteban Gomez*, another work in which extensive text, in conjunction with reference to musical material (a literal 'reference sonority' in this case), extends yet also "bottlenecks" musical transformation, resulting in a 'closed' indeterminacy whose morphology is only defined by a second-order meta-structure. Such a structure offers an expansive calculus of parametric transformations, as opposed to strict quantitative sound measurements, leading to what James Tenney calls a "polymorphic" form as opposed to a statistically homogenous "ergodic" form. [55] Such polymorphism aligns with Kramer's biotemporality as a linear, albeit variable, sequence of events creating an experience of process and transformation.

This helpfully means that there can be observable similarities. Certain gestures written in the score, for instance, can be readily heard in both public performances, which aid the analysis

[54] Thomas DeLio, *Circumscribing the Open Universe*, 71-72.
[55] James Tenney, "Form in 20th Century Music," 1970, https://www.plainsound.org/pdfs/Form.pdf, 10.

process by providing sonic touchpoints for reference with the score through another act of mapping, this time across realizations of *CD* as opposed to within one.

The clearest resemblances come from the ends of the performances, where there is a palpable decrease in overall density towards the end as players drop out as they finish a single pass through the instructions. In the Westben realizations, this typically took place in the final 30 seconds, as the below waveforms demonstrate to some degree through an average decrease of total volume:

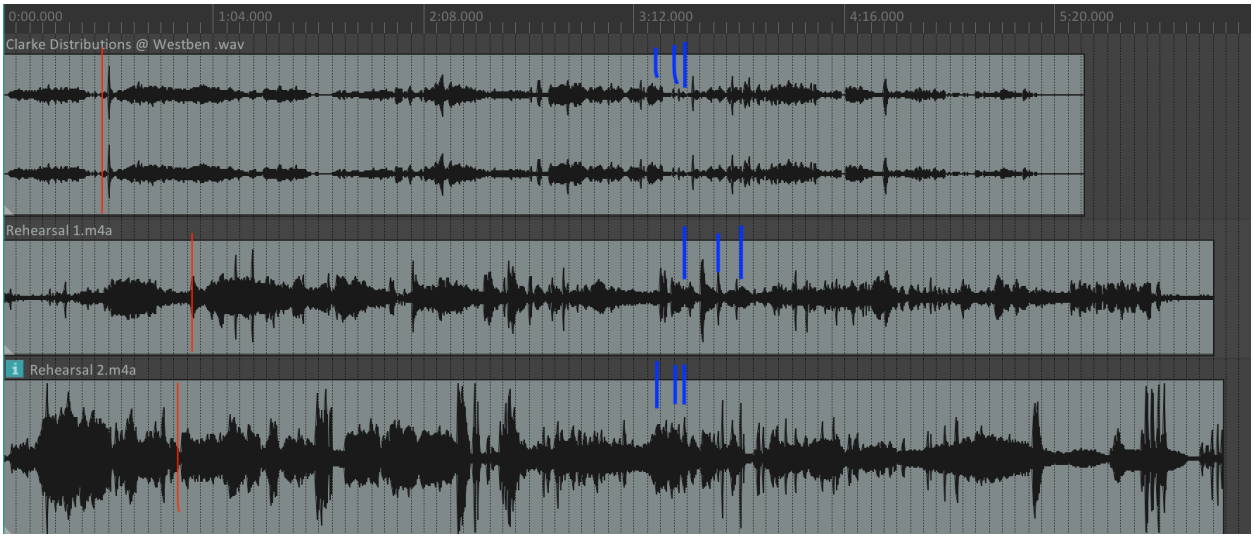

Fig. 6: Waveforms of three CD realizations from the 2019 Westben Performer-Composer residency, with lines marking certain corresponding patterns described below.

Certain consistent patterns arise, such as the early increase and decrease in volume within the first minute, followed by certain consistent spikes in volume (one always follows the initial swell, marked by the red lines). Individual gestures also remain consistent: for example, the blue lines indicate three highly similar sounds in time and space played by guitarist Jacinta Clusellas—their duration and volume and place in the time of performance indicate her as likely

fulfilling the instructions of Performer 7, specifically the “four short loud noises” instruction also in a halfway position. Shortly before that, just after 3:00 in all three recordings, there is a brief white noise band, performed by either Davy Sumner or The Honourable Elizabeth A. Baker (electronics). These shorter sounds are easier to place in relation to the score, and ground the cross-mapping of events. Finally, certain players also tended to finish earlier or later—here, Erika Dohi (melodica) and Nick Hon (drums) consistently are the last to finish, indicating some degree of concrete approach to the sections.

It's important to note that the Constellation performance, too, dramatically decreases in density later in the piece: after approximately 7 minutes in the dress rehearsal, and after 8 and a half minutes in the recital performance:

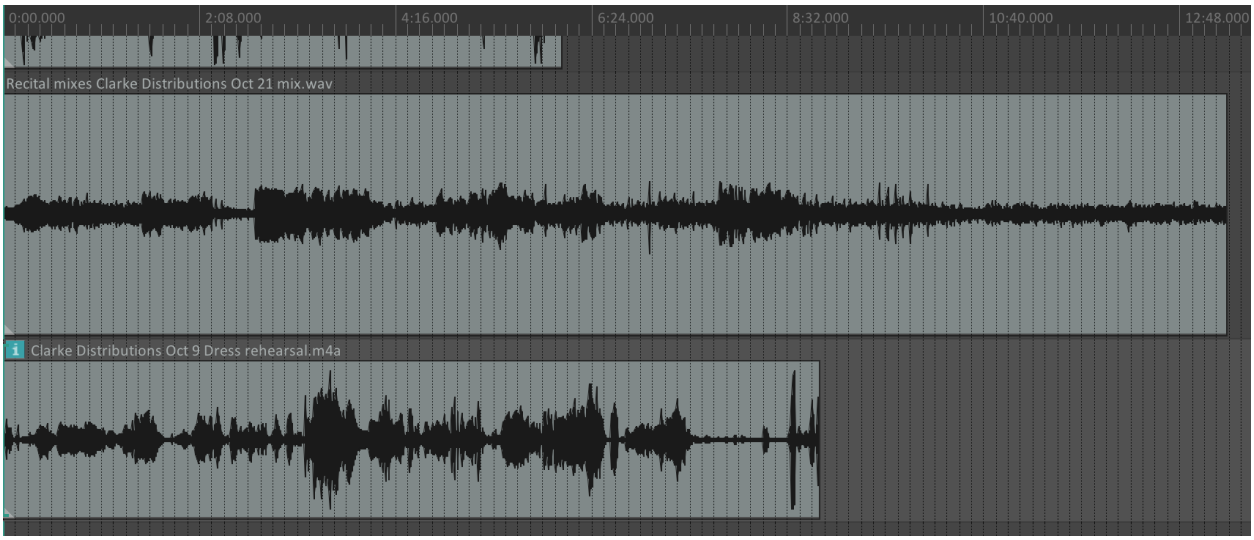

Fig. 7: waveforms of CD realizations on October 9, 2022.

While not displaying the exact same proportionality as the Westben performances, the correspondence points towards the same processes at work, however obliquely. This obliquity is also affected by the previously stated caveat that these acts of analytic listening are compromised

by their fundamental reliance on particular recordings from a certain material position, which fundamentally are unable to disclose the acoustic or psychological "reality" of the performance situation. The establishment of a pattern, however, helps affirm formal consistencies. The variety of proportions, in fact, make an effective case for the strength of the structure as substantial across degrees of duration. Similar to the observations DeLio makes of *In Memoriam,* the structure is not a material instantiation, but rather "the framework through which such realizations evolve. It is the framework for a process yet to be realized. Recognition of this quality of imminence is crucial to any understanding of the work."[56] It is this act of recognizing imminence, and how one responds to it, that is measurable as the 'speed of thought'. The score facilitates space for understanding this through its meta-structure, the given musical/thought processes in 'arbitrary' composed order.

iii. Ordering and its effects

Why order these instructions at all, then? If the attention to individual relations and forms of time take precedence as mentioned above, why not have a more ergodic, freely-chosen level of sequential form?

On a conceptual level, it was immediately apparent that a huge number of potential organizations of parameters were possible, vastly exceeding the ability to realistically accomplish a thorough exploration within in the scope of the compositional circumstances. It resembled the 'initiation of a process' characteristic of series-based work, in which the variety of applications require multipart compositional work, testing the principle through reiteration. In

[56] Ibid, 86.

James Saunders' description of such work: "A series is initiated, so there are principles governing why and how this happens…There are also principles linking the constituent parts of a series, creating constraints for the maker, and presenting points of contact between the parts that may allow the nature of their relationship to be apparent to someone experiencing the work."[57] As previously mentioned, the legibility of the relationships was a guiding question in the creatiom of *CD*—part of this legibility becomes a matter of how these parametric decisions influence subsequent ones. To order them meant creating situations in which the degree of heterogeneity of materials was a factor taken into account. In *CD*, one can observe an increasing degree of heterogeneity of later instructions, following initial instructions concerned with very few basic relationships (namely, variations on intersubjective and group volume). Other articulations of the principle would mean drawing attention to other relationships with differing degrees of heterogeneity, also subject to the transformation of the initial conceptual frame over time. Such movement of ideas around, towards, or away from the point of initiation can likewise characterize and elucidate entries in a series, with boundaries whose ambiguous existence enhances the comprehension of each work's particular characteristics and identity. Simultaneously, this contributes a nuanced understanding to the concept as a whole by providing a further connection in the network of performances, providing concrete information for future developments in composition, performance, and perceiving.

The practical manifestation of this delineation is that having some degree of fixed material allows performers to give greater attention to the moment-by-moment processes by

[57] James Saunders, "Testing the Consequences—Multipart Series in the Work of the Wandelweiser Composers," *Contemporary Music Review* 30, no. 6 (December 2011): 499.

reducing mental load as relating to structural processes. Multiple performers affirmed the benefit of this approach. Kimmel, for example, wrote,

> "The instruction "only proceed with a sound once when you are fully aware of your parameters and how to interact" was reassuring in making me consider my musical decisions carefully. It was wise not to try to sync this piece to a stopwatch, as I did not feel the need to rush through each box compared to other scores I've worked with just to keep up with the timing."[58]

While an extrinsic limit like a timer does address the issue of duration to some degree, the imposition of "natural" time may equally push players towards certain temporalities aiming for a quantity of completion over quality (in no small part due to personal histories typically engaged with music where completion of a score is a requisite condition). It would be a technically satisfactory performance, but risk sublimating a certain degree of imminence, thus reducing the experience of piece and affecting the broader considerations of the score's openness. Along with the immediate sonic qualities expressed in performance, players bring an accumulated body of experiences which weight their choices and perceptions concerning the expression of form. Where spontaneous decision-making can be (must be, even) accommodated more quickly in such moments in *CD*, the change of structural elements leaves a trace as players work with new perceptual frameworks in parallel with those they have inherited, on multiple formal levels.

[58] Jeff Kimmel, personal correspondence with author, November 7.

iv. Making it explicit

In rehearsal processes, such a strand of decisions about a piece can be more precisely traced through the particular collection of intersubjective exchanges and their ensuing consequences. There is no fully 'fresh' start when it comes to learning, or re-learning, a particular piece or situation's indeterminacies. Clare Lesser notes, "The first time a performer "makes" an indeterminate work, the process must be approached with new eyes; but once that first contact has occurred, everything after becomes experimentation based on experience. In other words, future performances are contingent on past models."[59] Lesser's observation rings true in rehearsals for the October 9 performance of *CD:* in the first recorded rehearsal, a 12-minute stretch of time was set as an initial bound for exploration of the score. Afterwards, performers were asked how far they had gotten in the score: answers ranged from 2/3rds of the way through the full set of instructions to two complete passes and then some. Subsequent rehearsals were conducted with this window of time maintained, and in follow-up conversations, performers began to adjust the temporal scale of their actions to this duration. The reasons for this maintenance were essentially logistical in nature as opposed to anything fundamental: program length (the piece included 3 other works already lasting over an hour), rehearsal availability (3 rehearsals over 2 months with approximately 2.5 hours given to each individual work), etc. These more mundane factors might seem to be trifling when factored against what Jason Toynbee calls the "ideology of creativity" shaping musical labor towards a glorified

[59] Claire Lesser, "The Rehearsal Process: Finnissy, Hespos, and Pragmatic Approaches to Indeterminacy," in *Experience Music Experiment*, ed. William Brooks (Leuven, BELGIUM: Leuven University Press, 2021), 106.

process of 'true' musical realization, but invariably they too are key markers of material effects on the labor and output of such highly contextual processes.[60]

Leading up to the performance, I made the decision to return to the 'one-pass' structure akin to the premiere performance at Westben. This was due to various 'extramusical' desires: 1) to have the structure highly legible between the performances discussed to 'test' the score's principles; 2) to create variety in perceptions of time for the performers (another piece also had a similar extrinsic temporal limit); 3) relatedly, belief that the change in conditions would create a more 'interesting' performance as a result of the sudden change. Undertaking this decision revealed that despite attention to labor, logistics, and process, a certain idealism persisted in these circumstances: an orientation towards the notion of *CD* as a cohesive musical work with testable boundaries, as well towards broader conceptions of valuing spontaneity in the music and the musicians' capabilities—the sort of "improvisational fictions," as referred to by Paul Steinbeck, that are assumed to underlie the practices of the musicians involved in the performance of open musics. Such fictions can entail not only analytic models, but social values, especially "if the prospect of creating something never before heard can charge an improvising ensemble with a sense of possibility, investment, and mutuality that is far from ordinary."[61] Such a prospect can be related to the previously mentioned "microshocks" of Massumi, out of which a "micropolitics" may be formed from the indeterminate or improvised moment. I had explicitly framed the change as a means of finding, per Massumi "the enabling constraints and techniques

[60] Jason Toynbee, "The labour that dare not speak its name: musical creativity, labour process and the materials of music," in *Distributed Creativity: Collaboration and Improvisation in Contemporary Music*, ed. Eric F. Clarke and Mark Doffman (Oxford University Press, 2017), 37-39.
[61] Paul Steinbeck, "Improvisational Fictions," *Music Theory Online* 19, no. 2 (July 2013), https://doi.org/10.30535/mto.19.2.9.

of relation that tailor the event to what's singular about that particular coming together."[62] Despite such affirmative valences, these totalizing assumptions are rarely complete. As Raymond MacDonald and Graeme Wilson demonstrate, values need only be shared (explicitly or implicitly) to the extent that they enable a satisfactory group negotiation.[63] 'Unsatisfactory' negotiations may have the result of more clearly demarcating these values through the resulting breakdown in coherence when certain technical and affective elements of the score and performance situation proved to lack the necessary salience.

This is exactly what happened in the dress rehearsal at Constellation: lacking the previous, more obvious extrinsic limit, the ensemble was a little over 9 minutes into the piece, and facing increasingly large gaps of silence, a performer asked "so wait, did we finish?" As it turns out, not quite everybody had, and the fact that it wasn't apparent meant that changing the form had larger impacts on the performance than I had imagined. The solution was fairly simple: advise performers to have an extremely clear indicator that they had completed their instructions (putting their instrument down, stepping back, etc.). But it revealed that I had overestimated the amount of shared understanding when it came to concrete elements of performance.

Since this was a dress rehearsal as opposed to a public performance or earlier rehearsal, the stakes for doing a 'correct' or even 'happy' (ala Anderson) rendition were lower, but the impending audience loomed over the proceedings. Even in such circumstances, it was an important opportunity to clarify elements of performance and enrich the experience of the piece on an immanent level. And the solution seemed to address the issue, if not in its entirely--

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[62] Massumi & McKim, "Micropolitics", 17.
[63] Raymond A. R. MacDonald and Graeme B. Wilson, "Distributed Creativity and the Myth of Shared Understanding," in *The Art of Becoming: How Group Improvisation Works*, 1st ed. (Oxford University Press, 2020), 91–111, https://doi.org/10.1093/oso/9780190840914.001.0001.

according to the previous analysis of individual and group playing, the “sense of an ending” still meant that some parts, and others, may not have been completely fulfilled in performance. Regardless of such exactitude, the situation recalls another important point raised by Lesser: "If we dismiss the idea of a “final,” “perfect,” or “correct” performance in the sense of an ultimate truth, rather than simply acting within the parameters set by the composer, then the field opens up to uncountable future creative performances within those parameters, including the realisation that experience is often deeply perplexing and that process can be just as important as results—indeed, that sometimes process *is* result."[64] While it would overstate the work’s powers to say it induces this realization, *CD* leans heavily into it by turning around what is asked for in the idea of ‘correct’ performance, dismissed to the margins yet nevertheless exerting an influence.

The ability to change and negotiate form in *CD* brings the fact of this acting within parameters to the fore, highlighting the perplexing elements of experience and how they may be addressed both individually (performers’ technique in enacting the score’s instructions) and collectively (how time and musical space are known intersubjectively). These two types of humanizing factors push back against the ‘ideal’ performer subject often assumed in analyses of indeterminate music, indeed, these factors become emphasized instead. What changes between rehearsals and realizations and ensembles, what stays the same – the openness of *CD’s* form, and the results of moving at the speed of thought, help to reveal what is common to the work as an overall apparatus: a unique pliable object with a corresponding practice, here made self-evident, of intervening upon our sensibilities.

[64] Lesser, “The Rehearsal Process,” 102.

IV. Conclusions & Extrapolations

i. Practice, or exemplary musical thought

What does it take for a composition to become a practice? Composer/musicologist Eva-Maria Houben makes the distinction between acts of musical repetition that are simply exercises for rehearsal, and those which constitute or point towards a more general activity as part of life, or a practice. Particular compositions, for Houben, invite composers, performers, and listeners to certain practices: types of gestures and modes of attention unique to that composition and the network of those who engage with it.[65] To describe these aggregates of practices, she uses the term 'form of life', alluding to its usage by Ludwig Wittgenstein regarding as an agreement in shared language, and the activity that co-constitutes it.[66] Brian Kane makes the connection to a musical practice explicit, writing that "understanding is given in the application of practices, and is not equal to giving reasons or providing facts which guarantee the meaning of such actions. The meanings of words, actions, and musical objects are given in their usage, in the manner in which they fit into a network of available practices. Such an overlapping and clustered set of available practices is intended by Wittgenstein's phrase, 'form of life.'"[67]

While Kane speaks of the set in an objective term, throughout the *Philosophical Investigations* Wittgenstein emphasizes the role of activity in how language-games are played, how contexts are assumed or arrived at, and how they persist or change. He uses chess as an

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[65] Eva-Maria Houben, *Musical Practice as a Form of Life: How Making Music Can Be Meaningful and Real*, Music and Sound Culture, volume 32 (Bielefeld: Transcript, 2019): 31, 65.
[66] Ludwig Wittgenstein, *Philosophical Investigations*, trans. G.E.M. Anscombe, 3rd ed. (Oxford: Basil Blackwell, 1968): 11, 88.
[67] Brian Michael Kane, "The Music of Skepticism: Intentionality, Materiality, Forms of Life Including 'Anaphora', for 14 Solo Strings, Harp and Piano" (Ph.D., United States -- California, University of California, Berkeley), accessed September 12, 2022, 135.

example, but the transference of its meaning to music readily arises: “Just as a move in chess doesn't consist simply in moving a piece in such-and-such a way on the board—nor yet in one's thoughts and feelings as one makes the move: but in the circumstances that we call "playing a game of chess", "solving a chess problem", and so on.”[68] Other references to singing and musical themes reinforce that musical thinking underlies much of Wittgenstein’s thought; elsewhere, he even draws a direct connection between sentences and musical themes as propositions.[69]

Wittgenstein, though, did not live to see the dramatic transformation of what musical themes could be in the mid-20th century. As Polo Pujadas notes, notational experiments including new symbols and the introduction of ‘ordinary’ language shifted the gesture of the score towards alluding to creative actions rather than its own self-referential structures, until “the score is no longer a mnemonic device to be read, interpreted and executed, but a process through which musical language is constructed, in some cases as a meta-language that, rather than referring to what is already established, discovers new horizons.”[70] The act of discovery through this process of a score-as-meta-language is achieved, then, through following the given propositions for musical action, not only to completion but to some sort of realization supplementary to the score’s propositions in a way that is unique to the situation, or the aforementioned “enabling constraints” of the performance’s micropolitics. *CD* functions this way through bypassing the ambiguous nature of musical themes by being linguistically propositional and literalizing its process. Because the structure of the propositions are absent of meaning until made true or false

[68] Wittgenstein, *Philosophical Investigations*, 17.
[69] Ludwig Wittgenstein, *Notebooks 1914-1916* (New York: Harper & Brothers, 1961): 40e.
[70] Magda Polo Pujadas, “Philosophy of Music: Wittgenstein and Cardew,” *Revista Portuguesa de Filosofia* 74, no. 4 (December 30, 2018): 1427.

in performance, the role of process is unavoidable, requiring re-articulation but only within the isometry of its aleamorphic parameters: that (paraphrasing Wittgenstein) we understand the musical gesture in the sense that it can be replaced by another one which matches the same instruction, but also in the sense that it can not be replaced by any other.[71]

The enactment of this irreducibility through the supplement becomes what Gabriel Tupinamba calls "a strange 'formal surplus' of life itself, the collateral consolidation of a certain way of living which does not coincide with the written rules to which one's conduct should measure up." If the score is the written rules, what else is there? This surplus could be thought of as the traces of "musical expression" which individuate and exemplify a performance. Per Tupinamba, such exemplification exceed rules to become forms of thought, or practice, only through the degree to which its construction is only possible in its given context. [72] Yet such a pursuit of this exemplification also demonstrates a rule by revealing just how much more can be done with it or beside it—pushing past mere compliance through a more profound incarnation of practice which lays bare the fact of its being done and made immanently, revealing the wider extent of a score's structural space of possibilities.

Such exemplification in *CD* is rendered on several levels, and by several members of this community of practice, namely the performers. They may accomplish the parametric correlation in such a way that demonstrates not only the ability to conceptualize the relationships on an increasingly defined scale, but give external reality to that definition through displayed technique. When the basic rule is relatively simple, the 'space' for this surplus of exemplification

[71] Wittgenstein, *Philosophical Investigations*, 143.
[72] Gabriel Tupinambá, "Freeing Thought From Thinkers: A Case Study," *Continental Thought & Theory* 1, no. 1 (April 2016): 160-162.

and the exemplary act's particular qualities become all the more visible. In the case of a performance of *CD,* it entails not only the fundamental technical component to make following the rule visible, but it also includes two other important broad considerations of the supplementary life and activity. First, there is an aesthetic consideration of the sound 'in itself' along its fulfillment of the score's instructions, and its relation to other practices and conventions embodied in the performer. There is also a key ethical consideration: implicitly, actions and sounds must occur in such a way that any performer's ability to listen and act should not be infringed upon. A realization of *CD* relies on a equality of performers' potential—should someone seek to overpower or mislead the musical situation through in a way that would prevent interconnectivity (excess volume and/or length, for instance) or deliberately not following the instructions, the situation is destabilized. MacDonald and Wilson's study of improvisers is apt in other situations of musical openness as well regarding this point: "'"As long as each person…thinks that they are working together, their interaction will show musical qualities. Trust and commitment to the musical and social interaction are key to its success, rather than shared understanding."[73] This rings especially true for a work such as *CD,* which hinges on the constant upending of shared understanding, prioritizing the quality of interaction.

This important consideration has a deep impact on the general fine-tuning of listening that must occur in order to have musical information to work with at all within the rules of *CD*. A certain degree of safety and regard is implicitly in place in performance, affirming a complex but considerate environment for listening even as the practice's boundaries are probed as a matter of fulfilling the score. This element of the practice happens amongst not only performers, but the

[73] Raymond A. R. MacDonald and Graeme B. Wilson, "Distributed Creativity and the Myth of Shared Understanding," in *The Art of Becoming: How Group Improvisation Works*, 1st ed. (Oxford University Press, 2020), 109.

audience as well. The process of discerning a sound in *CD* is identical for both--listening to sounds individually and in relation in order to make meaning out of the performance. This meaning, defined through the interplay of sounds' individual and relational qualities, are the experiential nuances of categorization and conceptual transference. As this meaning is introduced through performance within the composition's practice, it inevitably points those involved with it back towards their subjectivity, and the forms of life which they are already located in. As Kane notes, such locations of forms of life are always entangled with other practices, though not all practices point back to their subjects to the same degree.[74] The subjectivities brought about in indeterminate performances, though, more frequently induce conceptual movement into other practice, and create a (multiply figurative) impact. As a particular set of practice, the "form of life" brought about within a performance of *CD* (or any other work) can suggest its applications not only within its own structure, but outwardly, suggesting what Cardew writes in the *Treatise Handbook,* that "Musicality is a dimension of perfectly ordinary reality. The musician's pursuit is to recognize the musical composition of the world."[75] Such recognition may be fundamentally impossible to complete, but through practice, may be approached ever closer and closer with techniques likewise musically derived.

ii. Affirming open ontologies

[74] Kane, "The Music of Skepticism," 258-260.
[75] Cornelius Cardew, *Treatise Handbook* (London: Edition Peters, 1970): xx.

CD simultaneously instantiates a musical practice, and can be a musical practice itself. In the attention given to attention, it recasts its structural identity as DeLio's "framework" for relations, or more specifically, what composer/critic Julian Day refers to as a "'relational sounding' in which structures are enacted through interlinked actions within groups of people."[76] More broadly, as an open musical work, it perhaps most clearly represents Boretz's general conception of composition of artworks: "the definition and creation of relational 'universes' of elements in whose interrelations are embedded hypothetical properties of relational behavior; hypotheses, that is, of 'what can be learned to be observed' on the basis of what has already, by appropriate receptors, been learned to be observed."[77] As such a set of hypotheses, it paradoxically seeks to incite a myriad of irreducibly singular sounding and behavioral realizations. Yet proof of such difference relies on recognizing its traces of similarity, of seeing the exemplifying structure that itself is the novel extension of a variety of novel extensions and connections of immanent musical qualities. These sorts of puzzles bring to the forefront a link made by Andrew Kania: any act of musical analysis is fundamentally an ontological analysis as well.[78] Where this concerns a relational sounding, the question becomes: how do we conceive of these relations in order to 'compose' with them?

At first, we sought to break down these relations at the atomistic level of the language proposing them: how word choice, sequence, and grammar of *CD*'s many instructional boxes brought about its various sonic possibilities. The insertion of these factors into performance

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[76] Julian Day, "From You to Me and Back Again: Interdependent Listening and the Relational Aesthetics of Sound," *Leonardo Music Journal* 26 (December 2016): 75.
[77] Benjamin Boretz, "Nelson Goodman's Languages of Art from a Musical Point of View," *The Journal of Philosophy* 67, no. 16 (1970): 550.
[78] Andrew Kania, "New Waves in Musical Ontology," in *New Waves in Aesthetics*, ed. Kathleen Stock and Katherine Thomson-Jones (London: Palgrave Macmillan UK, 2008), 26, https://doi.org/10.1057/9780230227453_2.

situations reveal moment-to-moment and large-scale rules and assumptions also shaping realizations, themselves a wider set of relations that become incorporated in an intra-active entanglement of processes through performances. At its most idealistic, the experiences gained through such performance perdure, spread beyond its sounding boundaries as a practice and cemented in expressive forms of life, fulfilling Tupinamba's hypothesis that "certain true ideas are only thinkable through a collective engagement… rational concepts which, as thoughts, can produce consequences in the world."[79]

Across all of these registers of conclusions, small to large, a meta-language based on metaphors of tactility and objectivity imminently forms to clarify the many virtualized abstractions of musical openness: the spectra of parameters of each instruction in *CD* creates a line out of two abstract qualitative points. Their manifestations take on a shapechanging, polymorphic capability, per Tenney's system. In that same system, form is composed of hierarchal 'levels' in which sub-elements are under, or within, another aspect of form. Rules are broken, or bent, or we stay near them. Combining these metaphors, one may conceive of a musically open work as a container of "set of rules", a piece of conceptual Tupperware, including its own unique internal dimensions of navigable space, based on particular rules that we interact through their wording in such a way that establishes some sort of perceivable limit, or border. Even Clarke and Linson's document, the inspiration for *CD* and the ensuing series of compositions, makes attention a thing we move around, raise and lower, strew about, as if we were holding it like a musical instrument or a packet of seeds. In this way, CD also points "outwards" towards its observable position relative to us as analysts. It configures the space of

[79] Tupinambá, "Freeing Thought From Thinkers," 157.

encounter that is an act of performance, or realization, indeed making the idea of an *approach* possible at all.

George Lakoff and Mark Johnson note that many of our experiences are condensed into such objects via *ontological metaphors*, saying such experience-objects are "not merely *understood* intellectually, but…*used* automatically, unconsciously, and without noticeable effort as part of our normal functioning."[80] Lochhead provides further clarification on the origin of these ontological operations, specifying that phenomenological principles give us this condition use by means of how we come to engage with "things", arising from intentional acts within experience: "To 'visualize' implies more than simply seeing, it implies 'making' something that can be seen—a bringing to visibility. As such it implies a certain kind of comprehension through conceptualization and it affords a kind of 'sharability.' Practically, visualizing allows us to point—literally or figuratively—to the thing and share thought about that thing with others."[81] Visualization, then, is a term for this ontological condensation, and despite the term's ocular basis, is in fact concerned with the haptic tangibility of these objects: shaping them in such a way that they can be given, and agreed upon for the purposes of further shaping by others. From the linear parametric spectra wrangled together via instructions, to the labeling of *CD* as a set or container of rules, to even the singular designation of the musical work itself, we are continuously making the unreal 'at hand' through musical operations and observations. And while Lakoff, Johnson, and Lochhead all note that such usage is to some degree embodied and automatic, to do so with purpose, towards the novel extensions of conceptual transfers, brings us

[80] George Lakoff and Mark Johnson, *Metaphors We Live by: With a New Afterword* (Chicago: University of Chicago Press, 2003), 13-14.
[81] Lochhead, "Visualizing The Music Object," 68.

closer to the subsequent expansive possibilities that such languages brings about, through the same metaphorical re-connections suggested by analytic mapping processes.

From such a metaphor, whether brought about by conventional language or unconventional use like *CD's* rules, chains of association may be built ever outward from that initial act, like the parable of blind men touching the elephant. Through mapping-like instances of metaphors as encounters, scores give us traces, the outlines of what they contain, and provoke us further. From that, the "imaginative" function of music comes to play more and more, proliferating and building understandings in its wake, forming a system out of itself that effectively changes our understanding of reality. Roger Shepard's own ontological metaphor for musical space, derived from his principle of acoustic equivalence briefly alluded to in a previous chapter, is used to gradually construct a multidimensional model of pitch that ultimately resembles a five-dimensional, "double helix wound around a helical cylinder".[82]

[82] Shepard, "Structural Representation Of Musical Pitch," 364.

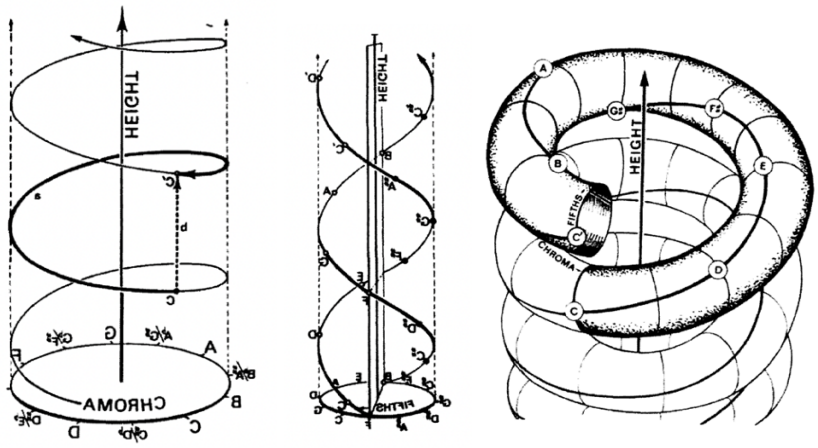

Fig. 8: The progression of Shepard's metaphorical pitch space, culminating in the five-dimensional representation.[83]

At the end of his dissertation, Kane uses Shepard's elaborate creation as a *reductio ab absurdum* rebuke to metaphorical descriptions of musical space, noting that it is "so complex as to lose all relation to the phenomenology of musical space", yet is otherwise unable to create a meaningful explanation of pitch beyond simple perception.[84] But rather than leaving such fantastically constructs as fallacies, it seems more fruitful to them as a point of departure, and utilize the possibility that our comprehension of musical qualities can take on shapes which exceed and transform said comprehension. The aforementioned container properties of musically open works, with rule-determined spaces of possibility inside them, seem far more likely to resemble such elaborate shapes than any simple real-world box. Imagining a musically open work as such may productively enable engagement with it.

[83] Ibid., 353-364.
[84] Kane, "Music of Skepticism," 359.

This creativity can be an end in itself, not just the means. As Nelson Goodman reminds us, "for a categorical system, what needs to be shown is not that it is true but what it can do."[85] Such systems of categorization or novel descriptions, per Goodman, even form the basis for our means of creating the entire paradigms out of which our sensibilities operate, our "worlds". Indeed, one of the fundamental constitutive acts of such ordinary worldmaking that Goodman describes is none other than *composition*, reminding us what is at stake in the musical act and all the requisite analysis and organization and intuition that goes into it.

iii. worldmaking and/as open music analysis

Goodman notes that the creative comprehension of worldmaking naturally proliferates, yet the plurality of worlds is not the same as their equal veracity: "Mere acknowledgement of the many available frames of reference provides us with no map of the motions of heavenly bodies…awareness of varied ways of seeing paints no pictures. A broad mind is no substitute for hard work."[86] Any meaningful knowing, and its sharing, requires a working-out of what is right or wrong relative to the world's purview, in this case the framework provided by a composition. To compose musical openness, inducing indeterminacy through notation, language, and other such means, thus means bear an ongoing yet exciting responsibility: to consider what is actually possible in performances, even thinkable, and to be as surprised and informed by the results as the rest of our shared communities of experience to further evolve our knowledge.

[85] Goodman, *Ways of Worldmaking*, 129.
[86] Ibid. 21.

CD is one such manifestation of that responsibility, generating awareness, reflexivity, attention, connection, and of course, sound, as a container of rules repeatedly instantiated as practice by means of a score. Analysis of the work, too, is another manifestation, per Lochhead made possible through recurrent, practiced encounter: "The work, as a named musical occurrence, has its own processes of becoming through such existing and possible performances, and the analyst encounters and engages the work over some span of these processes of becoming… building their differences into analytical investigations of the work."[87] Where a work's indeterminacy or openness is concerned in such encounters, analysts seek the sensible boundaries of their containers, and the differences become not merely descriptive of the work, but in fact constitutive of it (despite the invariance of the original score-object). This can be seen, for instance, in the feedbacking noetic chains of performance, listening, and score-reading and making David Clarke models when addressing John Cage's *Solo for Piano*, and Philip Thomas' call for an ongoing performance practice and re-interpretation within a range of indeterminacies and inherently conflicting ideologies in the work.[88]

One more intriguing possibility for such works, and perhaps a key marker where their functions within acts of research-creation are concerned, is the degree to which their processes reflexively incorporate such analysis *within a performance itself*.

Musical openness may just make this necessity more explicit. Goodman describes all works of art as "samples from the sea. They literally or metaphorically exemplify forms, feelings, affinities, contrasts, to be sought in or built into a world. The features of the whole are

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[87] Lochhead, *Reconceiving Structure In Contemporary Music*, 70.
[88] Clarke, "Musical Indeterminacy and Its Implications for Music Analysis," 180; Thomas, "Understanding Indeterminate Music through Performance," 111-112.

undetermined; and fairness of sample is (a) matter ...of coordination of samples."[89] Implicitly, all works are open to some negotiation and discovery of their exemplary features—music, however, may offer more potential avenues for this reinterpretation than say, a painting. Conventional notation, of course, offers a particular sample, or container of symbols and practices, that does not insist on a such a full reconstitution of the work's boundaries. *CD*, however, has far more latitude in this sense. Because it is based in a framework of relation, and the frequent microshock-reconstituting of its terms (through the new parameters in each box), the opportunity for complete recalibration arises. While as previously noted, successful performances involved some degree of commonly held forms, within such agreements thought can freely explore. In this way, an exemplifying quality of *CD*'s enactment is that which resembles Lochhead's aforementioned goals for productive music analysis, especially the generation of new behaviors, and the exploration of "reflexivity between sensation and concept".[90] Over time within performances, a player's grasp of this relation is allowed, even encouraged, to shift, while overall broadening the relation's range. The end result is a novel set of particular knowledges regarding technical knowledge about how to engage with the work, and general knowledge about one's experiential capacities where music is concerned. In this sense, it directly matches Lochhead's concept of analytical inquiry, which "entails holistic investigation of a musical work (or possibly works) from these multiple aspirational perspectives with the goal of producing knowledge—knowledge about musical works and the nature of music experience." [91] Guided by these aspirations, investigation through the immanent multiplicity of musical openness positions indeterminacy as not only a modality, but a (work-determined) set of mechanisms for the

[89] Goodman, *Ways Of Worldmaking*, 137.

[91] Lochhead, *Reconceiving Structure In Contemporary Music*, 68.

production of knowledge. *CD* is composed in such a way as to be especially welcoming to this end goal, originating as it does from a series of questions, and the catalytic encounter with (Eric) Clarke's work.

Subsequent *Distributions* and other works in my portfolio have sought to emphasize this possibility of including direct reflexivity, and the highlighting the possibility of knowledge production through interaction in performance. Music's multiplicities make it an optimal playground for concepts, and as this analysis shows, it can make space for a wide variety of them. Key to this is the fundamental nature of activity to every one of these elements discussed: even in the extended silences and textures of *CD*'s performances, and other acts of musical openness, there is the ceaseless possibility of change, and one step further in our mappings, performances, and forms of life, changing what can change.

Works Cited

Anderson, Virginia. "The Beginning of Happiness: Approaching Scores in Graphic and Text Notation." In *Sound & Score: Essays on Sound, Score and Notation*, edited by Paulo de Assis, William Brooks, and Kathleen Coessens, 130–42. Orpheus Institute, 2013.

Assis, Paulo de. "Virtual Works—Actual Things." In *Logic of Experimentation*, 41–70. Leuven University Press, 2018. https://doi.org/10.2307/j.ctv6zdcpg.5.

Behrman, David. "What Indeterminate Notation Determines." *Perspectives of New Music* 3, no. 2 (1965): 58–73. https://doi.org/10.2307/832504.

Boretz, Benjamin. "Nelson Goodman's Languages of Art from a Musical Point of View." *The Journal of Philosophy* 67, no. 16 (1970): 540–52. https://doi.org/10.2307/2024578.

Cardew, Cornelius. "Notation: Interpretation, Etc." *Tempo*, New Series, no. 58 (July 1, 1961): 21–33.

Clarke, David. "Musical Indeterminacy and Its Implications for Music Analysis: The Case of Cage's Solo for Piano." *Music Theory and Analysis (MTA)* 3, no. 2 (October 20, 2016): 170–97. https://doi.org/10.11116/MTA.3.2.3.

DeLio, Thomas. *Circumscribing the Open Universe*. Lanham, MD: University Press of America, 1984.

Eco, Umberto. *The Open Work.* Cambridge, Mass: Harvard University Press, 1989.

Feisst, Sabine. "Negotiating Freedom and Control in Composition: Improvisation and Its Offshoots, 1950-1980." In *The Oxford Handbook of Critical Improvisation Studies*, edited by George Lewis and Benjamin Piekut, 206–30. Oxford Handbooks. New York, N.Y. ; Oxford, U.K: Oxford University Press, 2016.

Felski, Rita. "Context Stinks!" *New Literary History* 42, no. 4 (2011): 573–91. https://doi.org/10.1353/nlh.2011.0045.

Goodman, Nelson. *Ways of Worldmaking*. Indianapolis, Ind: Hackett, 1995.

Harper, Adam. *Infinite Music: Imagining the next Millennium of Human Music-Making*. Ropley: Zero, 2011.

Hones, Sheila. "Text as It Happens: Literary Geography." *Geography Compass* 2, no. 5 (2008): 1301–17. https://doi.org/10.1111/j.1749-8198.2008.00143.x.

Houben, Eva-Maria. *Musical Practice as a Form of Life: How Making Music Can Be Meaningful and Real*. Music and Sound Culture, volume 32. Bielefeld: Transcript, 2019.

Kane, Brian Michael. “The Music of Skepticism: Intentionality, Materiality, Forms of Life Including ‘Anaphora’, for 14 Solo Strings, Harp and Piano.” Ph.D., University of California, Berkeley. Accessed September 12, 2022. http://www.proquest.com/docview/305361606/abstract/2043A5F3D4104CB7PQ/1.

Kania, Andrew. “An Imaginative Theory of Musical Space and Movement.” *The British Journal of Aesthetics* 55, no. 2 (April 1, 2015): 157–72. https://doi.org/10.1093/aesthj/ayu100.

———. “New Waves in Musical Ontology.” In *New Waves in Aesthetics*, edited by Kathleen Stock and Katherine Thomson-Jones, 20–40. London: Palgrave Macmillan UK, 2008. https://doi.org/10.1057/9780230227453_2.

Kramer, Jonathan D. *The Time of Music: New Meanings, New Temporalities, New Listening Strategies*. New York : London: Schirmer Books ; Collier Macmillan Publishers, 1988.

Kotz, Liz. “Post-Cagean Aesthetics and the ‘Event’ Score.” *October* 95 (January 1, 2001): 55–89.

Jacob, Mary Jane. “Experience As Thinking.” In *Art as a Thinking Process: Visual Forms of Knowledge Production*, edited by Mara Ambrožič and Angela Vettese, 100–113. Berlin: Sternberg [u.a.], 2013.

Lakoff, George, and Mark Johnson. *Metaphors We Live by: With a New Afterword*. Chicago London: University of Chicago Press, 2003.

Lakoff, George. “The Contemporary Theory of Metaphor.” In *Metaphor and Thought*, edited by Andrew Ortony, 2nd ed., 202–51. Cambridge, England ; New York, NY, USA: Cambridge University Press, 1993.

Lely, John., and James Saunders. *Word Events: Perspectives on Verbal Notation*. London; New York: Continuum, 2012.

Lesser, Claire. “The Rehearsal Process: Finnissy, Hespos, and Pragmatic Approaches to Indeterminacy.” In *Experience Music Experiment*, edited by William Brooks. Leuven, BELGIUM: Leuven University Press, 2021. https://go.openathens.net/redirector/umoncton.ca?url=https%3A%2F%2Febookcentral.proquest.com%2Flib%2Fumoncton-ebooks%2Fdetail.action%3FdocID%3D6707635.

Linson, Adam, and Eric F. Clarke. “Distributed Cognition, Ecological Theory and Group Improvisation.” In *Distributed Creativity: Collaboration and Improvisation in Contemporary Music*, edited by Eric F. Clarke and Mark Doffman, 52–69. Oxford University Press, 2017. https://doi.org/10.1093/oso/9780199355914.003.0004.

Lochhead, Judith. *Reconceiving Structure in Contemporary Music: New Tools in Music Theory and Analysis*. Routledge Studies in Music Theory 2. New York: Routledge, 2016.

———. “Visualizing the Music Object.” In *Postphenomenology: A Critical Companion to Ihde*, edited by Evan Selinger, 67–88. SUNY Series in the Philosophy of the Social Sciences. Albany: State University of New York Press, 2006.

MacDonald, Raymond A. R., and Graeme B. Wilson. “Distributed Creativity and the Myth of Shared Understanding.” In *The Art of Becoming: How Group Improvisation Works*, 1st ed., 91–111. Oxford University Press, 2020. https://doi.org/10.1093/oso/9780190840914.001.0001.

Massumi, Brian, and Joel McKim. “Of Microperception and Micropolitics.” *Inflexions* Micropolitics : Exploring Ethico-Aesthetics, no. 3 (October 2009): 20.

Noble, Jason. “Removing The Imaginary Boundary Between Score And Work: Interactive Geometrical Notation.” *Proceedings of the 4th International Conference on Technologies for Music Notation and Representation*, 2018, 7.

Oliveros, Pauline. *Software for People: Collected Writings 1963-80*. Second Edition. Kingston, NY: Pauline Oliveros Publications, 2015.

Polo Pujadas, Magda. “Philosophy of Music: Wittgenstein and Cardew.” *Revista Portuguesa de Filosofia* 74, no. 4 (December 30, 2018): 1425–36. https://doi.org/10.17990/RPF/2018_74_4_1425.

Rancière, Jacques. *The Politics of Aesthetics: The Distribution of the Sensible*. Pbk. ed. London ; New York: Continuum, 2006.

Sabbe, Herman. “Open Structure and the Problem of Criticism: Reflections on DeLio’s Circumscribing the Open Universe.” *Perspectives of New Music* 27, no. 1 (1989): 312–16. https://doi.org/10.2307/833275.

Saunders, James. “Testing the Consequences—Multipart Series in the Work of the Wandelweiser Composers.” *Contemporary Music Review* 30, no. 6 (December 2011): 497–524. https://doi.org/10.1080/07494467.2011.676898.

Shepard, Roger. 1982. “Structural Representations of Musical Pitch.” *In The Psychology of Music*, ed. Diana Deutsch, 343-390, 2nd edition. New York: Academic Press, 1982.

Steinbeck, Paul. “Improvisational Fictions.” *Music Theory Online* 19, no. 2 (July 2013). https://doi.org/10.30535/mto.19.2.9.

Tenney, James. “Form in 20th Century Music.” Plainsound, 1970. https://www.plainsound.org/pdfs/Form.pdf.

Thomas, Philip. “Understanding Indeterminate Music through Performance: Cage’s Solo for Piano.” *Twentieth-Century Music* 10, no. 1 (March 2013): 91–113. https://doi.org/10.1017/S1478572212000424.

Tormey, Alan. “Indeterminacy and Identity In Art.” *The Monist* 58, no. 2 (1974): 203–15.

Toynbee, Jason. “The labour that dare not speak its name: musical creativity, labour process and the materials of music.” In *Distributed Creativity: Collaboration and Improvisation in Contemporary Music*, ed. Eric F. Clarke and Mark Doffman (Oxford University Press, 2017), 37-51.

Tupinambá, Gabriel. “Freeing Thought From Thinkers: A Case Study.” *Continental Thought & Theory* 1, no. 1 (April 2016): 156-193.

Wittgenstein, Ludwig. *Notebooks, 1914-1916*. Translated by G.E.M. Anscombe. New York,: Harper, 1961. http://archive.org/details/notebooks191419100witt.

———. *Philosophical Investigations*. Translated by G.E.M. Anscombe. 3rd ed. Oxford: Basil Blackwell, 1968.

Wolterstorff, Nicholas. *Works and Worlds of Art*. Clarendon Library of Logic and Philosophy. Oxford : New York: Clarendon Press ; Oxford University Press, 1980.

Zbikowski, Lawrence. “Music, Language, and Kinds of Consciousness.” In *Music and Consciousness: Philosophical, Psychological, and Cultural Perspectives*, edited by David Clarke and Eric Clarke, 179–92. Oxford University Press, 2011. https://doi.org/10.1093/acprof:oso/9780199553792.001.0001.

Zucker, Benjamin. *Clarke Distributions (for 10)*. Musical score, 2019.