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Holophony as Compositional Thinking in Music for Ensemble and Electronics

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Abstract

In dieser Masterarbeit wird Holophonie als eine Form kompositorischen Denkens in Ensemblemusik mit Elektronik untersucht. Ausgangspunkt ist eine konkrete Hörerfahrung: In weiten Teilen des zeitgenössischen Repertoires für Instrumente und Elektronik wird nicht ein Ensemble autonomer „Stimmen“ wahrgenommen, sondern ein einziger, innerlich differenzierter Klangraum. Vor diesem Hintergrund zeichnet die Arbeit eine Verschiebung von linienbasierten Konzepten der Monophonie, Homophonie und Polyphonie hin zu texturalen, massenhaften und spektralen Ansätzen (Ligeti, Xenakis, Schaeffer, Smalley, Grisey) nach und diskutiert Panayiotis Kokoras’ Begriff der holophonen musikalischen Textur als eine zentrale Formulierung dieser Entwicklung. Holophonie wird anschließend im Kontext der Psychoakustik (spektrale Fusion und Auditory Scene Analysis), der Soundscape- und Ökoakustikforschung, der Phänomenologie und der enaktivistischen Kognitionswissenschaft sowie psychologischer Konzepte wie Alexithymie und auditiver Agnosie verortet, um zu beschreiben, wie wahrgenommene Ganzheiten entstehen und unter welchen Bedingungen Wiedererkennen fragil wird. Abschließend wendet sich die Arbeit der Komposition *ALIENATED* für Organ, Ensemble und Elektronik als Fallstudie einer holophonen Praxis zu. Sie zeigt, wie instrumentale, räumliche und elektronische Strategien als ein einziger dynamischer Klangorganismus zusammenwirken, und schlägt Holophonie sowohl als analytische Perspektive als auch als kompositorische Haltung vor.

Abstract

This master's thesis explores holophony as a mode of compositional thinking in ensemble music with electronics. Its starting point is a concrete listening experience: in much contemporary repertoire for instruments and electronics, what is heard is not a set of autonomous “voices” but a single, internally differentiated sound field. Against this background, the thesis traces a shift from line-based concepts of monophony, homophony, and polyphony toward textural, mass-based, and spectral approaches (Ligeti, Xenakis, Schaeffer, Smalley, Grisey), and discusses Panayiotis Kokoras’s notion of holophonic musical texture as a key formulation of this tendency. Holophony is then situated within psychoacoustics (spectral fusion and auditory scene analysis), soundscape and ecoacoustic theory, phenomenology and enactivist cognitive science, as well as psychological constructs such as alexithymia and auditory agnosia, in order to articulate how perceptual wholes are formed and when recognition becomes fragile. Finally, the thesis turns to the composition *ALIENATED* for Organ, ensemble, and electronics as a case study in holophonic practice, showing how instrumental, spatial, and electronic strategies interact as a single dynamic sound organism and proposing holophony as both an analytical lens and a compositional attitude.

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Introduction

Over the last few decades, ensemble music with electronics has become one of the central areas in which both musical texture and modes of listening are being rethought. In many works for ensemble and electronics — for example, in repertoire ranging from Luigi Nono and Kaija Saariaho to Franck Bedrossian — my own experience as a listener is that I do not primarily follow discrete "voices" in the traditional sense, but rather experiences integrated, evolving sound fields. In these contexts, parameters such as timbre, spatial distribution, and electronic mediation often appear to play a more decisive role in perception than clearly traceable horizontal voicing lines or “vertical” sound constellations. The score may still be organized into separate staves for instruments, and electronics, yet actual listening tends to engage with a single, mobile sound field whose density, internal grain, and configuration are in constant flux.

This situation reveals a gap between inherited theoretical models and contemporary listening practices. Traditional concepts of monophony, homophony, and polyphony are grounded in a view of musical texture as the interaction of lines: voices and their connections in horizontal and vertical dimensions. Even where these categories are stretched or combined, they still presuppose a fundamentally “vocal” organization. In a significant part of today’s ensemble-and-electronics repertoire, this assumption becomes problematic: dense micropolyphony, stochastic sound “clouds,” spectral processing, and multichannel diffusion are typically perceived as holistic structures rather than as the sum of clearly traceable individual lines.

It is in this context that Panayiotis Kokoras’s notion of holophony becomes particularly relevant. Holophony is not a genre label, but a way of describing textures in which numerous micro-events are perceived as components of a single sound formation — a coherent “sound body” rather than a collection of independent voices. In this master’s thesis a conceptual framework around holophony will be developed, seeking to transform it from a predominantly analytical term into a mode of compositional thinking for music involving ensemble and electronics. The central question is therefore not only “what is holophony?”, but “what does it mean to think compositionally through holophony, and what does this imply for listening?”

To address this question, the thesis weaves together several lines of inquiry. First, it situates holophonic thinking within the historical context of twentieth-century music, where a gradual shift from line-based textures toward masses, objects, and sound fields can be

observed. Second, it links the concept of holophony to ideas from soundscape studies and ecoacoustics, which approach sound as an environment shaped by a multiplicity of agents rather than as a set of isolated sources. Third, it draws on phenomenological and enactive accounts of perception, in which perception is understood as embodied, situated, and continuously constructed through interaction with the environment. Finally, it introduces a series of psychological concepts – most notably alexithymia and auditory agnosia – not as programmatic "subjects," but as lenses through which particular modes of sonic oversaturation and disturbed recognizability can be described.

This study is positioned at the intersection of theory and artistic practice. It proceeds from the perspective of a composer who increasingly works with a holophonic rather than voice-centered mindset, hearing and shaping the ensemble with electronics not as a sum of parts, but as a single, internally differentiated sound body. The analysis of my composition *ALIENATED* for organ, ensemble, and electronics is therefore not a mere appendix to the theoretical discussion; it functions as a testing ground in which holophonic ideas are concretised, nuanced, and sometimes put under pressure. The structure of the thesis reflects this dual orientation. In chapter 1 traces of the genealogy of holophonic thinking, from monophony, homophony, and polyphony to approaches based on sound masses and fields will be described. In chapter 2 this framework will be broadened by examining the connections between holophony, spatial sound, soundscape and ecological approaches, phenomenology of perception, and psychological models of wholeness and fragmentation. In chapter 3 a detailed reading of ALIENATED will be offered, showing how holophonic thinking informs the piece at the levels of material, space, form, and notation. In the final section, the main conclusions will be summarized and possible directions for further research and compositional work will be suggested.[1]

1. Historical and theoretical background

1.1 From monophony to holophony

When dealing with the topic of holophony, it is important to refer to the historical preconditions for its emergence and the main drivers of its development. Returning to the traditional categories of monody, homophony, and polyphony, one can note that all three presuppose a fundamentally linear conception of musical texture. Whether this linearity is

[1]Throughout this Master's thesis, I used Deepl, Grammarly and ChatGPT-5 to support translation, grammar checking, conceptual clarification, and the improvement of my writing.

manifested in a single melodic strand, in a leading melody with accompanying parts, or in several autonomous contrapuntal lines, musical organization is understood primarily in terms of voices and their horizontal or vertical articulation. Monophony refers to a single melodic line without harmonic stratification; it is the most transparent form of this type of thinking. Gregorian chant or early folk songs — the entire meaning here is concentrated in the contour of a single sequential line. An important element is, first of all, movement in time. The unfolding of a phrase and its gravity. The vertical dimension is not actually articulated, but rather hidden in the internal logic of the melody. Homophony adds a vertical harmonic horizontal, but it does not destroy the linear logic, rather reorganizes it. A main voice (melody) emerges, along with subordinate voices that form the chordal accompaniment. In much Classical and Romantic music, this usually results in a clear hierarchy: the upper voice is brought to the foreground, while the harmonic layer remains in the background. In earlier practices, however — for instance in Baroque music with basso continuo — the picture is more complex. The continuo part can carry a strong structural and generative function, and the upper lines often grow out of this harmonic–bass framework. In all of these cases, though, the texture is still thought of as a set of lines whose roles are distributed within a hierarchy. Polyphony, on the contrary, distributes horizontal melodic thinking equally among several autonomous voices. In Palestrina's motets and later, in Bach's fugues, several voices lead their own, relatively independent lines: each has its own contour, its own rhythm, its own moments of tension and resolution. Of course, polyphony also has a harmonic vertical — chord combinations, resolution of intervals—but these are more a consequence of counterpoint than a primarily given logical structure.

From the late nineteenth century onwards — and especially in the second half of the twentieth century – the notion of the line as the primary carrier of musical structure was progressively destabilised. Already in the music of composers such as Richard Wagner, harmonic constellations and chordal successions begin to take precedence over clearly profiled melodic voices; in the twentieth century this development is radicalised in various forms of *Klangkomposition*[2] or "sound composition", where texture and timbre become central organising forces. What had seemed self-evident in monophony, homophony, and polyphony — melody as the main structural agent, the individual voice as the basic unit of musical thought — began to lose its centrality as composers increasingly turned to textural, statistical, and spectral modes of organization. One of the most important turning points is

[2]The term Klangkomposition is used in German-language musicology to describe compositional approaches in which sound and texture function as primary structural parameters rather than themes or motivic lines.

the micropolyphony in the work of György Ligeti. In works such as *Atmosphères* (1961) and *Lux aeterna* (1966), the composer continues the polyphonic tradition: the material is organized in the form of polyphonic canons, the voices enter sequentially, shift in time, and form a complex contrapuntal grid, but at the level of sound, the situation is radically different: the density of the overlays is so great that it is impossible to follow a single voice, as it seems to "dissolve" into a slowly changing sound mass. The listener is no longer able to follow individual voices;[3] instead, they perceive a texture with certain spectral and dynamic characteristics, for which the overall change in density, register, and timbre is more important than the trajectories of individual parts.[4]

From a different, more "rationalistic" aesthetic position, Iannis Xenakis arrives at similar conclusions. In orchestral works such as *Metastaseis* (1953–54) and *Pithoprakta* (1955–56), individual sounds and glissandi are treated not as elements of thematic development but as "points" within a larger field governed by statistical laws: distributions of pitch, rhythmic density, and probabilistic events. As Xenakis himself writes in "The Crisis of Serial Music", "Linear polyphony destroys itself by its very complexity; what one hears is in reality nothing but a mass of notes in various registers."[5]

A further, and in many respects more radical, move away from linear thinking towards sound-mass is connected with the emergence of electroacoustic and spectral practices. In his Traité des objets musicaux, Pierre Schaeffer introduces the concept of the sound object as a new basic unit of musical thought. In this perspective, sounds are no longer understood primarily through their position in a melodic or harmonic line, but through their own morphological and timbral characteristics, grasped under the conditions of what Schaeffer calls "reduced listening" (écoute réduite). As he puts it, this mode of perception is what " … consacre formellement l'objet sonore : l'écoute réduite"[6] that is, a way of listening which deliberately suspends questions of cause and meaning in order to attend to the sound itself—its shape, duration, spectral content, and dynamic profile. From this point of view, what matters is no longer the continuity of a line, but rather discrete sound-events or textural fragments, which can be isolated, repeated, and transformed by technical means. This shift

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[3]Panayiotis Kokoras, *Towards a Holophonic Musical Texture*, in: *Journal of Music and Meaning* 4 (2007) [online available: https://panayiotiskokoras.com/texts/P.KOKORAS%20-%20Towards%20a%20holophonic%20musical%20texture.pdf, date of access: 15 December 2025].

[4]Cf. Richard Steinitz, *György Ligeti: Music of the Imagination*, Boston: Northeastern University Press 2003, pp. 103–104.

[5]Iannis Xenakis, *Formalized Music: Thought and Mathematics in Composition*, rev. ed., Hillsdale, NY: Pendragon Press 1992, p. 8.

[6]Pierre Schaeffer, *Traité des objets musicaux*, Paris: Seuil 1966, p. 349.

entails a different musical logic altogether: sound is treated as a self-sufficient entity, capable of entering into relations with other sounds not only in time, but also in the vertical dimensions of spectrum and spatial projection.

In his theory on “Spectromorphology” , Denis Smalley proposes describing sound as a trajectory of energy and spectral changes rather than as a set of discrete notes.[7] For him, a sound is not simply “C4 on the piano”, but, for example, a rapid impulse with a bright onset and a decaying resonance whose spectrum gradually thins out; similarly, a bowed cymbal or a filtered noise band can be heard as a sustained accumulation of energy whose spectrum slowly opens or closes. Instead of the traditional division into “melody” and “chords”, Smalley distinguishes between gestural sounds that behave like directed actions — impulses, attacks with characteristic growth and decay, sustained sounds that swell or fade — and textural sounds in which internal fluctuation and spectral “grain” are more salient than any single goal-directed motion. He analyses in detail how combinations of spectral, dynamic, and spatial parameters allow particular events to appear as “figure” against a “background”, or, conversely, to be reabsorbed into a texture—for instance, when a narrow-band moving resonance emerges from a broad noise field and then dissolves back into it. From this perspective, the traditional linear notation system turns out to be only one, and a rather limited, way of recording such sound processes: it can approximate pitch and rhythm, but leaves most aspects of spectromorphological behaviour — continuous timbral change, dynamic profile, spatial motion—either implicit or entirely unnotated.

In Gérard Grisey’s spectral music, for example, the idea of composition as a “sound sculpture in time” is formulated even more clearly. Harmony, timbre, and space are considered in this context as inseparable dimensions of a single continuous process. Spectral composers often start from a specific acoustic phenomenon—for example, from an analysis of the overtone spectrum of a particular sound—and construct a piece as an unfolding of this spectrum in time and space: through gradual microchromatic changes, transitions between noise and (musical) tone, and shifts in emphasis to different registers and groups of instruments. Here it is almost impossible to draw a clear line between “melody,” “harmony,” and ‘timbre’: these are all different projections of the same process onto different “coordinates” of sound.

To sum up, in these different aesthetic contexts, a common foundation is gradually taking shape. Music increasingly ceases to be conceived in terms of separate voices and linear

[7]Cf. Denis Smalley, *Spectromorphology: Explaining Sound-Shapes*, in: *Organised Sound* 2/2 (1997), pp. 107–126, esp. pp. 107–113.

polyphonic interaction. On this basis, a new mode of thinking becomes possible, one that seeks to describe and compositionally articulate sound as a holistic organism formed by a multitude of interconnected micro-elements rather than as the sum of autonomous lines. In his text — "*Towards a Holophonic Musical Texture*," — Panayiotis Kokoras argues that contemporary compositional practice calls for a fundamentally different concept of texture, in which, as he writes, "musical notes are abandoned in favour of delicately carved gestures, warm fizzing sounds, forcefully distorted sonorous variants, and instrumental acoustic experimentations," and in which the traditional categories of interval, harmony, motive, and melody give way to "gestures, figures, textures, articulations, postures, symbolisms, and degrees of sound energy often grouped into a single composite sonic entity.".[8]

Very often, when a score is formally divided into separate instrumental "parts," we hear a completely different sound result; the musical fabric often behaves more like a continuous field with internal differentiations than a set of lines. This discrepancy is particularly evident where the boundary between acoustic and electroacoustic music is blurred: in chamber ensembles with live electronics, in spatial compositions for ensemble and multi-channel sound projection, in works where the sound event is simultaneously timbre, movement in space, and a structural unit of form. It is precisely to describe such situations that Kokoras introduces the concept of "holophonic musical texture"[9] — a texture in which numerous independent sound events are perceived not as separate voices, but as elements of a single holistic sound object. [10]At the same time, individual micro-events may differ markedly in spectral structure, articulation, or spatial position, yet their main purpose is not to "demonstrate their autonomy" but to refine the identity of the whole — to alter its graininess, transparency, weight, and internal tension.[11]

1.2. Holophony as musical texture

Kokoras introduces the term holophonic musical texture, derived from the Greek words holos ("whole, complete, taken as a totality") and phōnē ("sound, voice, utterance"), thus literally suggesting the idea of sound conceived as an integrated whole rather than as a mere aggregate of parts. He refers to holophony as a type of texture in which a large number of

[8]Panayiotis Kokoras, *Towards a Holophonic Musical Texture*, in: *Journal of Music and Meaning* 4 (2007) [online available: https://panayiotiskokoras.com/texts/P.KOKORAS%20-%20Towards%20a%20holophonic%20musical%20texture.pdf, date of access: 15 December 2025].
[9]Ibid.
[10]Ibid.
[11]Ibid.

independent sound lines or events are perceived not as a set of separate voices, but as components of a single holistic sound formation. [12] It is important to note that this does not mean a reduction in diversity: micro-events — by "micro-events" I mean local sound elements (short gestures, noise flashes, small timbral changes) — that do not function as independent melodic lines, but change the character of the entire sound field may differ significantly in spectrum, morphology, articulation, or spatial arrangement, but they do not claim independent voice-like identity in the traditional polyphonic sense. Their main function is to maintain the identity of the larger whole; something similar can be said about the system of overtones, which forms a complex but still unified timbre.

In this sense, Kokoras claims, that holophony differs significantly from classical textural types. Polyphony assumes that each line retains a distinct contour and a certain autonomy; homophony, on the contrary, establishes a hierarchy between the leading melody and the harmonic-rhythmic support subordinate to it. In holophonic texture, as Kokoras describes, neither of these conditions is met: there is no privileged voice, but at the same time, the listener is unable to break down what they hear into separate lines. The composer's attention shifts to the formation of a global sound object or field — with its degree of "porosity," rhythmic "grain," spatial configuration, and temporal evolution.[13]

Kokoras directly links his concept of holophony to psychoacoustic studies of spectral fusion and the formation of sound objects. He draws, in particular, on the work of Stephen McAdams, who shows that complex spectra are perceived as a single timbre when their frequencies have a common origin, a coherent harmonic organization, and a common temporal evolution.[14] When individual frequency components occur synchronously, change in volume, and have interrelated modulation, the ear does not break them down into "many sounds" — instead, a sensation of a single "sound body" with an internal structure is formed. When these conditions are violated (asynchronous attacks, independent modulations, multidirectional frequency movement), the reverse process occurs: a single object is split into several sources.

Albert Bregman's theory describes similar grouping processes in a broader context: the auditory system automatically organizes a continuous flow of acoustic energy into "streams" and "objects" based on the principles of proximity (in time and frequency), similarity,

[12]Ibid.
[13]Ibid.
[14]Cf. Stephen McAdams, *Spectral Fusion and the Creation of Auditory Images*, in: *Music, Mind, and Brain: The Neuropsychology of Music*, ed. Manfred Clynes, New York: Plenum Press 1982, pp. 279–298.

continuity, and shared fate. [15] It is these mechanisms, which in everyday life help us to "stratify" the acoustic scene (distinguish between voices, ambient noise, background music, etc.), that are consciously used as a compositional tool in a holophonic context. It is important to emphasize that for Kokoras, holophony is not reduced to high density. A large number of simultaneous events can be organized in such a way that they remain a "chaotic sum" — the ear simply cannot form a stable object from them, and the result will be perceived as noise overload. Holophonic texture, on the contrary, requires a delicate adjustment of the relationships between microelements so that a stable identity of the whole emerges in perception, which is preserved even when the details are constantly changing.[16]

In this sense, it differs both from Ligeti's micro-polyphony and Xenakis's "sound masses". In holophony, the emphasis is not only on statistical density or random distribution of events, but on a distinct "figure of the whole" that manifests itself through its variations.

For me as a composer, this perspective is fundamental. When I think of texture as holophonic, I do not start from separate parts that then need to be "combined" into a transparent texture; on the contrary, I first imagine a single sound body in space, and only then decide which micro-movements, which "gestures" of instruments and electronics will support this integrity, and which will cause temporary splits. In this approach, each instrument, each channel of electronics, is not a "voice" in the polyphonic sense, but a local modification of a larger whole, a local vector of movement within a single sound field. Holophony could be seen not only as a theoretical term, but also a way of thinking that organizes both hearing and compositional imagination around the concept of "whole sound."

2. Holophony in contemporary and interdisciplinary context

2.1. Spatial sound and ensemble as a single sound body

The transition from linear thinking to holophonic thinking cannot be understood without realizing how radically the mode of listening itself has changed in the 20th and 21st centuries. While for a classical orchestra or chamber ensemble, space did not usually influence the compositional concept of a work, in electroacoustic and post-spectral practice,

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[15] Cf. Albert S. Bregman, *Auditory Scene Analysis: The Perceptual Organization of Sound*, Cambridge, MA: MIT Press 1994, pp. 55–150.

[16] See. Panayiotis Kokoras, *Towards a Holophonic Musical Texture*, in: *Journal of Music and Meaning* 4 (2007) [online available: https://panayiotiskokoras.com/texts/P.KOKORAS%20-%20Towards%20a%20holophonic%20musical%20texture.pdf, date of access: 15 December 2025].

space becomes an integral parameter of composition. In this context, spatial sound ceases to be an "additional effect" (such as panorama, echo, reverberation, etc.) and becomes one of the main axes of texture formation. It can be assumed that in holophonic thinking, one does work not only with the vertical (spectrum) and horizontal (time, development), but also with the dimension — real or virtual space in which sound exists. The location of instruments in the performance space, the nature of reverberation, the direction and trajectory of sound movement through a multi-channel system, different "planes" of sound (near/far, high/low, dry/reverberated) — all this becomes an internal part of the texture, rather than remaining an external presentation.

In his classification of relationships between instruments and electronics, Simon Emmerson proposes, among other things, a distinction between "local" and "field": the live performer appears as a local gesture or figure, while the electronic layer functions as the environment or field in which that figure acts.[17] Electronics, in this view, are not merely a backdrop but an independent environment with its own temporal scales, capable of entering into complex relationships with local events. Within holophonic thinking, these two poles are not opposed but integrated: local gestures (attacks, articulations, brief figures) are perceived as micro-events within a larger field.

Agostino Di Scipio's ecosystemic approach radicalises precisely this local/field relationship. In his works, microphones, loudspeakers, instruments, architectural acoustics, and the "noise weather" of the performance space are incorporated into feedback networks so that what Emmerson calls the "field" is no longer a fixed environment but a dynamically self-regulating system.[18] Di Scipio thus offers a concrete realization of the holophonic idea: the sonic field continuously reshapes itself in response to the behavior of its local components.

The sounds of the space, the breathing of the audience, and the slightest noise events become part of the input signal. The holophonic "sound body" here is constantly being rearranged, responding to the movement of the performers, the presence of the listeners, and changes in acoustic conditions.

Jean-Luc Nancy describes listening as a state of being in resonance: the listener is no longer a detached subject standing opposite a sound object, but is affected and "set into vibration"

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[17]Cf. Simon Emmerson, "*Local/Field": Towards a Typology of Live Electroacoustic Music*, in: *Proceedings of the International Computer Music Conference, Aarhus*: ICMA 1994, pp. 31–34; and Simon Emmerson, *Living Electronic Music*, Aldershot and Burlington: Ashgate 2007.

[18]See Agostino Di Scipio, "*Sound Is the Interface": From Interactive to Ecosystemic Signal Processing*, in: *Organised Sound* 8/3 (2003), pp. 269–277.

by it, sharing in the resonance of the world.[19] Applied to holophonic ensemble music with electronics, this means that space is not just the location of loudspeakers; it is an environment in which relationships are formed between sound, the performer's mind and body, and the listener's mind and body. When the ensemble is not just defined by the location on stage but also around the audience, when electronics use multi-channel or ambisonic systems, space begins to behave as an internal parameter of texture. The listener's body becomes a kind of "moving listening point" within this body of sound.

In practical terms, this means that a composer who thinks holophonically must work simultaneously with the score, the architecture of the space, the loudspeaker layout, and the acoustics of the hall. From this perspective, an ensemble with electronics becomes a modeled but living sound organism rather than a sum of parts. At the same time, this raises concrete problems for notation. The traditional score is well suited to representing discrete pitches, rhythms, and instrumental actions, but it can only partially encode multichannel diffusion, spatial trajectories, or the behavior of feedback networks. These aspects often have to be delegated to diagrams, technical riders, and software patches. The gap between what the score can display and the full holophonic field is itself symptomatic of the shift from line-based to field-based thinking.

2.2. Soundscape, ecology, and biosound

As mentioned before, the second half of the twentieth century introduced a range of approaches that think in terms of sound masses, spectral fields, and spatial sound. Against this backdrop, and following the introduction of holophony as a "single sound organism," it is natural to turn to another important context — soundscape and acoustic ecology. These mostly contemporary approaches initially conceive of sound not as a separate line or part, but as a complex environment in which multiple sources coexist in a common field. That is why they are important for understanding holophonic texture. Here, integrity appears not as the sum of individual voices, but as the quality of the soundscape.

In his concept of soundscape, R. Murray Schafer proposes to treat the sonic environment as a field structured by different functional layers. In the opening chapters of The Soundscape, he suggests that the analysis of a soundscape should begin by distinguishing between what he calls "keynote sounds," "signals," and "soundmarks."[20] "Keynote sounds do not have to

[19]Cf. Jean-Luc Nancy, *Listening, trans*. Charlotte Mandell, New York: Fordham University Press 2007.
[20]R. Murray Schafer, The Soundscape: Our Sonic Environment and the Tuning of the World, Rochester, VT: Destiny Books 1994 1977 , pp. 9-10.

be listened to consciously; they are overheard but cannot be overlooked," whereas "signals are foreground sounds and they are listened to consciously," and "the term soundmark is derived from landmark and refers to a community sound which is unique or possesses qualities which make it specially regarded."[21] His examples — from church bells that determine the temporal rhythm of a city to the sound of the sea that shapes the acoustic profile of the coast — show that we always live within complex sound fields. The "holophonic logic" is already evident in these descriptions. Sound is not reduced to a single "voice"; it is perceived as an environment where individual events (signals) only make sense in relation to the background and the "sound memory" of the place. Added to this is the development of spatial sound in the media — formats such as Dolby Atmos, ambisonics, installation practices, and game engines with three-dimensional audio—all of which no longer operate with "tracks" but with spatial sound environments. In this context, holophony becomes not only a compositional technique, but also a way of reflecting on reality. It allows us to articulate, in musical form, to model and rethink the modes of sound in which we already find ourselves every day.

In this broad field, I treat holophony not only as a tool for organizing texture but also as an intellectual stance. It is based on the assumption that integrity does not negate multiplicity, but arises from it; local gestures only make sense in the field of relationships; listening is, as Schafer insists, "an active process of exploration," and sound is not an "addition" to the visual world, but "a fundamental means by which we structure and interpret reality."[22]

Barry Truax, developing Schafer's ideas, introduces the concept of soundscape composition—a composition that works with recordings of real environments, but does not dissolve them completely into abstraction. As he explains, whereas in much electroacoustic music "the sound loses all or most of its environmental context," in soundscape composition "it is precisely the environmental context that is preserved, enhanced and exploited by the composer."[23] Unlike some "purely electroacoustic" practices, where the source of sound is often deliberately masked, in soundscape composition the recognizability of sources and contexts is preserved. We hear footsteps, voices, birds, urban noise. At the same time, this material is subject to editing, transformation, and spatial redistribution. For Truax, it is important that the composition does not destroy the ecological dimension of the soundscape: he argues that a successful soundscape composition "has the effect of changing the listener's

[21]Ibid., pp. 10-11.
[22]Ibid., pp. 11-12.
[23]Barry Truax, *Acoustic Communication*, Westport, CT: Ablex 1984, p. 207.

awareness and attitudes towards the soundscape, and thereby changing the listener's relationship to it."[24] The listener gets the opportunity to "hear" the environment more attentively, to realize its structure and fragility. In this sense, soundscape composition is not only a technique but also an ethical position, and its sound is almost always holophonic in nature: numerous sources, distributed in space and spectrum, are perceived as a single sound field. In the 2010s, at the intersection of ecology, acoustics, and art, a broader direction of ecoacoustics — often discussed under the heading of soundscape ecology — has been taking shape. As Almo Farina notes, it "represents a new transdisciplinary field of research" closely connected to landscape ecology and motivated by "the necessity to investigate the patterns and processes created by sounds" across multiple levels of "biological and ecological complexity."[25] Farina describes the soundscape as "the result of the mixture of different and concurring sounds"[26] and proposes distinguishing three interacting components: geophonies (sounds produced by non-biological natural agents), biophonies (sounds produced by living organisms), and anthrophonies (sounds produced by human technological activity). Here, the concepts of biophony, geophony, and anthrophony—terms introduced by Bernie Krause and adopted in soundscape ecology — are particularly useful: biophony is the sound of living beings (birds, insects, mammals), geophony is the sound of natural processes (wind, water, soil), and anthrophony is all forms of sound associated with human activity. [27]A change in the balance between these three layers is interpreted as a symptom of ecological transformations. For example, the disappearance of biophony with the intensification of anthrophony.

From this perspective, sound is no longer just artistic material, but also a scientific resource, yet it is conceived as a field of interaction between multiple agents. For holophonic music, the principle itself is important here: the ecosystem is described not through "individual voices," but through the structure of relationships in the field as a whole. This is the logic behind holophonic texture: numerous micro-level events (bird calls, wind noise, distant engines, human speech) can be heard as a single coherent sound organism with its own zones of density.

Composers and sound artists working in this field often use bioacoustic recordings as material for constructing complex sound environments. David Dunn, for example, creates

[24]Ibid., p. 207.
[25]Almo Farina, *Soundscape Ecology: Principles, Patterns, Methods and Applications*, Dordrecht: Springer 2014, p. 5.
[26]Ibid. p. 7.
[27]Cf. Bernie Krause, *The Great Animal Orchestra: Finding the Origins of Music in the World's Wild Places*, New York: Little, Brown 2012, pp. 21–83.

works in which controlled electronic processes interact with recordings of insects or the bioelectric signals of trees, forming a kind of "sound ecosystem." As Dunn puts it, "the experience of listening is often one of perceiving the inseparability of phenomena."[28] Here, holophony arises almost automatically: each biological organism sounds like a separate "voice," but for the listener, these voices merge into a "coherent" soundscape in which it is difficult to distinguish between 'main' and "background."

If we apply the terminology of holophony to such practices, we can see a very clear correspondence. Micro level — individual sound "organisms" (birds, insects, human voices, electronic objects), each with their own spectral and rhythmic behavior; macro level — the soundscape as a single body in which these organisms coexist, mask each other, form temporary clusters, swarms, "clouds."

It is precisely these relationships between the micro and macro levels that are central to the holophonic texture in chamber ensemble music with electronics. The ensemble and electronics can be understood as a model of a sound ecosystem, where instrumental and electronic layers function as "acoustic species." A single instrumental gesture is a local micro-event; the entire ensemble-electronic space is the "bioacoustic" landscape of the work.

For my work, this connection has two key implications. First, soundscape and ecological music provide a language with which to describe the holophonic situation inherent in ensemble music with electronics. Instead of talking about "soloist" and "accompaniment", we can talk about a population of sounds, their interaction and balance in a common field. Second, the ecoacoustics approach adds an ethical dimension. Using biosound, the voices of creatures or models of sound ecosystems, the composer inevitably touches on the question of the representation of the "other" — human and non-human, real and constructed. In this perspective, holophony ceases to be just a purely technical term for describing musical texture.

It begins to work as a way of thinking about complex, multi-layered environments in which the plurality of voices does not disappear, but, on the contrary, constitutes a whole. It is this logic that will be important to me later when I analyze my own works for ensemble and electronics, where the voices of creatures, field recordings, and instrumental gestures interact in a common holophonic field.

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[28]David Dunn, *Nature, Sound Art, and the Sacred*, [online available: https://www.davidddunn.com/~david/writings/terrnova.pdf , date of access: 15 November 2025], p. 1.

2.3. Philosophical and psychological perspectives

As soon as we start talking about "wholeness that is greater than the sum of its parts," we inevitably go beyond the narrow confines of musical terminology. Concepts similar in logic to holophony have long existed and developed in philosophy, psychology, and systems theory — e.g., in Gestalt psychology, where perception does not arrive as a pile of separate "data," but as organized wholes (Wertheimer's famous example is that we do not experience "327 brightnesses," but "sky, house, and trees").[29] Systems theory makes a closely related point when it explains what "the whole is more than the sum of parts" means: that "constitutive characteristics are not explainable from the characteristics of isolated parts," and therefore appear as "new" or "emergent."[30] And in auditory perception research, Bregman shows how listening naturally operates by grouping sound into streams (it is "only to streams that we can listen in a naive way"), and connects this to "emergent features," noting that the familiar slogan about the whole "greater than the sum of its parts" is really about wholes having properties their parts do not have individually.[31] In this sense, holophonic texture is not only a technical innovation in electroacoustic or ensemble music, but can also be brought into a broader interdisciplinary discourse on how we perceive and think about wholeness.

One of the most obvious parallels can be drawn with Gestalt psychology. Kurt Koffka formulates the well-known principle: "the whole is something else than the sum of its parts."[32] It is not only about quantity ("there are many parts, the whole is more complex"), but also about the fact that perception is always dominated by configuration, the structure of relationships, rather than isolated elements. The laws of "Gestalt" — proximity, similarity — describe how the brain groups scattered stimuli into an "image" that is experienced as a unity. In this sense, holophony can be read as a musical Gestalt approach to texture. A multitude of sound elements are arranged in such a way that they are perceived not as "many voices" but as a single coherent sound image, in which the relationships between these parts are more important than the "particles" themselves.

This logic is detailed in the auditory plane by Albert Bregman's theory of auditory scene

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[29]Max Wertheimer, *Laws of Organization in Perceptual Forms*, in: *A Source Book of Gestalt Psychology*, ed. by Willis D. Ellis, London: Routledge & Kegan Paul 1938, pp. 71–72.

[30]Ludwig von Bertalanffy, *General System Theory. Foundations, Development, Applications*, New York: George Braziller 1968, p. 56.

[31]Albert S. Bregman, *Auditory Scene Analysis. The Perceptual Organization of Sound*, Cambridge, MA: MIT Press 1994, pp. 138–139.

[32]Kurt Koffka, *Principles of Gestalt Psychology*, London: Routledge & Kegan Paul 1935, p.176.

analysis. He shows that the auditory system constantly "decides" which frequencies, noises, and impulses belong to one sound object and which belong to another, forming so-called streams. [33] At the same time, the same Gestalt principles apply: elements that are similar in pitch, timbre, onset time, and direction of movement are grouped into a single whole. In holophonic texture, the composer actually works with these mechanisms. He or she enhances the synchrony of attacks, harmonizes spectral characteristics, and builds a common dynamic "fate" for different sound sources so that the ear perceives them as a single body. Or, conversely, he or she deliberately violates the conditions of grouping, provoking the "splitting" of the whole into a multitude of agents, creating tension between the whole and the fragmentary.

The phenomenology of perception offers another, but no less important perspective. Maurice Merleau-Ponty describes perception as always rooted in the "perceptual field"[34]: we never deal with a single stimulus taken out of context, but always with a configuration in which the body, space, objects, and their possibilities for interaction form a single field of experience. Transposed to a musical context, this means that the listener in a holophonic situation is not an external observer who "evaluates" the structure from the outside. They are always embedded in the sound field: their body, position in space, attention, even breathing become part of the way in which this field is experienced.

Jean-Luc Nancy, developing auditory phenomenology, refers to the concept of listening not as a "mechanical" perception, but as a state of openness and resonance, when the subject appears as one who responds to sound, "echoing itself".[35] In holophonic textures, this idea is embodied almost literally: the listener finds themselves inside the sound body that surrounds them, "touched" from all sides through multi-channel configurations, the movement of sound, and interaction with the acoustics of the hall. What has traditionally been referred to as "immersion in music" takes on a spatial and bodily dimension here: it is not only "attention" that is immersed, but also physical presence.

On the other hand, holophony resonates well with the ideas of systems theory and cybernetics. Norbert Wiener defines cybernetics as "the science of control and communication in animals and machines," emphasizing the processes of feedback in

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[33]Cf. Albert S. Bregman, *Auditory Scene Analysis. The Perceptual Organization of Sound*, Cambridge, MA: MIT Press 1994, pp. 24–176.

[34]Maurice Merleau-Ponty, *Phenomenology of Perception*, trans. by Donald A. Landes, London u.a.: Routledge 2012 [1945], p. 74.

[35]Jean-Luc Nancy, *Listening*, trans. by Charlotte Mandell, New York: Fordham University Press 2007, p. 72.

complex systems. [36] Later, Stafford Beer describes adaptive systems capable of maintaining viability in changing conditions, and in a musical context, Deren Pickles shows that cybernetic musical systems cannot be fully predicted: their state is always the result of the interaction of many agents — algorithms, performers, space, listeners. [37] From this perspective, holophonic texture can be understood as an emergent phenomenon: a holistic sound organism that arises from the dynamics of the system and cannot be reduced to any single line or "track."

Contemporary cognitive approaches, especially the concept of the "embodied" and "enactive" mind by Francisco Varela, Evan Thompson, and Eleanor Rosch, can be used for understanding holophonic thinking. For enactivism, perception is not a passive reception of ready-made information about the world, but an active "unfolding of the world" in the interaction between the organism and the environment.[38] We do not simply register objects, but co-create them through movement, attention, expectation, and memory. Spatial, holophonic music clearly demonstrates this logic: the listener is forced to constantly "assemble" wholeness from fragments that reach them from different sides, at different distances, in different registers and degrees of dispersion. Wholeness here is not predetermined — it is the result of active perceptual work.

If phenomenology, systems theory, and enactive cognition outline general structures of how perception functions in holophonic situations, clinical psychology offers more specific models of what happens when these structures are strained or partially disrupted. It is in this sense that the following psychological figures become relevant. The psychological figures I refer to — alexithymia and auditory agnosia — are not the "subjects" of the works and, moreover, do not serve as diagnoses; rather, they provide a lens through which to describe specific modes of listening. Alexithymia, as a clinical construct, describes a state in which a person experiences physical and affective saturation but has "difficulty identifying and distinguishing between feelings and bodily sensations; difficulty describing feelings". [39] It can be said that there is a gap between intensity and meaning here. Auditory agnosia is another form of this gap. In standard neurological descriptions, this is a condition in which basic auditory sensitivity is preserved, but the ability to recognize and interpret sounds is

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[36]Norbert Wiener, *Cybernetics: Or Control and Communication in the Animal and the Machine*, Cambridge, MA: MIT Press 1948, pp. 11–19.
[37]Cf. Daren Pickles, Cybernetics in Music, PhD diss., Coventry University 2016, pp. 148–49, 172-174.
[38]Cf. Francisco J. Varela, Evan Thompson, and Eleanor Rosch, *The Embodied Mind: Cognitive Science and Human Experience*, rev. ed., Cambridge, MA: MIT Press 2017 1991 1991, pp. 172–184.
[39]Graeme J. Taylor, R. Michael Bagby, and James D. A. Parker, *Disorders of Affect Regulation: Alexithymia in Medical and Psychiatric Illness*, Cambridge: Cambridge University Press 1997, p. 56.

impaired: familiar noises, voices, and even melodies can be experienced as unrecognizable acoustic events devoid of their usual meanings. [40] The distinction between “hearing” and “recognizing” becomes radical here: there is a physical presence of sound, but there is no corresponding cognitive image. Artistically, this is very close to holophonic situations in which the listener is immersed in a complex, rich sound mass, but the referential “anchors” — understandable sources, stylistic markers, genre clichés — are deliberately muted or absent.

In this context, holophonic texture can be described, in my view, as a kind of aesthetic model of states where there are too many sensations and too few concepts. Space is filled with sound, the body resonates, but semantic supports cannot keep up with the intensity of the experience. For me, this is important not as an illustration of clinical cases, but as a way of talking about the contemporary experience of listening in general. In overloaded media environments, we often experience something similar — a strong immersion in a stream of stimuli with a relatively weak ability to structure and comprehend it to the end.

3. ALIENATED: holophony in practice

There are many examples in my work that are closely related to holophonic thinking, such as *Skvyrk, Vnytrisjn’o, Solastalgia*, and many others. But in this thesis I would like to talk specifically about *ALIENATED* (2025) , as I consciously changed my approach to holophony in connection with the concept of the work.

For me, *ALIENATED* is a laboratory of holophonic thinking, in which a spatial ensemble, a new type of organ, electronics, and psychophysiological concepts interact in a common sound field. The title itself indicates a feeling of “alienation,” which, at the conceptual level, is associated with alexithymia and auditory agnosia, and at the sound level is realized through strategies of dissolution, fragmentation, and impaired recognition.

3.1. Concept and psychological framework

The psychological starting point for this work lies in the concept of alexithymia—a condition characterized by difficulties in recognizing, understanding, and verbalizing one's own

[40]Cf. Daniel I. Kaufer, “Agnosia,” in Encyclopedia of the Neurological Sciences, 2nd ed., eds.-in-chief Michael J. Aminoff and Robert B. Daroff (Oxford: Academic Press, 2014), n.p. [online available: https://www.sciencedirect.com/science/article/pii/B9780123851574004371 , date of access: 27 November 2025].

emotions, a tendency toward “outward-oriented” thinking, and impoverished imagination.[41] In alexithymia, affect does not disappear, but there is a disconnect between physical arousal and the ability to verbalize it. For me, this disconnect is embodied in situations where the sound surface is as saturated and intense as possible, but the composition deliberately avoids unambiguous expressive gestures or familiar “emotional codes.”

The second important reference point is auditory agnosia, a neuropsychological condition in which basic hearing sensitivity is preserved, but the ability to recognize and interpret sounds is seriously impaired. In classical descriptions, it is defined as the loss of the ability to recognize sounds “in the presence of normal hearing.” [42]Surrounding noises, voices, or even familiar melodies are perceived as undefined acoustic events, devoid of the usual semantic “anchors.”

These two concepts form the conceptual framework for *ALIENTED* and define an experience in which intensity is present, but recognizability and “emotional readability” are shaken. The holophonic texture becomes a way of musically articulating this state: the listener finds themselves inside a dense sound field that literally fills their body and space, but does not offer quick meaningful answers.

In this perspective, the episode with a relatively “tonal” center and an attempt to construct a melody is particularly revealing. Within the form, it appears as a kind of attempt at “normalization” — as if the system, which lives by the laws of holophonic blurring, suddenly tries to gather itself into familiar, homophonic-melodic forms. That is why this episode is experienced as the most “alienated”: against the background of the holophonic texture, it is precisely “normality” that sounds foreign here. In the finale, where the instruments return to the motifs of this section, but in a weakened, “uncertain” form, this attempt at integration becomes even less convincing — more like an echo of the desire to “be normal” than its realization.

3.2. Instrumentation and “sound creatures”

The piece was written for the prototype of a new organ (designed by Léo Maurel and called “Orguanous”), the Hanatsu miroir ensemble (bass flute, contrabass clarinet, percussion, cello, double bass), and electronics (8-channel system, live and fixed media). The organ is the core

[41]Cf. Graeme J. Taylor, R. Michael Bagby, and James D. A. Parker, *Disorders of Affect Regulation: Alexithymia in Medical and Psychiatric Illness*, Cambridge: Cambridge University Press 1997, pp. 26-42.

[42]Cf. Daniel I. Kaufer, “Agnosia,” in Encyclopedia of the Neurological Sciences, 2nd ed., eds.-in-chief Michael J. Aminoff and Robert B. Daroff (Oxford: Academic Press, 2014), n.p. [online available: https://www.sciencedirect.com/science/article/pii/B9780123851574004371 , date of access: 27 November 2025].

of this sound body: the instrument consists of seven independent blocks, each with its own register and material (wood and metal), which directly affects the spectral characteristics of the sound.

The organ is controlled via MIDI: I can control the attack of the sound, the combination of blocks, and adjust the amount of air in the system. It is precisely the work with air that allows me to change the degree of pitch certainty: at certain parameters, the sound of the *Orguanous* approaches an "organ-like" sound, recognizable in terms of intonation, and at others, it becomes blurred, moving into the noise-breathing zone. Thus, the organ constantly glides between recognizable and indefinite states, spectrally blending with the ensemble.

The ensemble works mainly with extended instrumental techniques. In the score, I use both traditional notes and graphic symbols: atypical note heads, linear and curvilinear contours, arrows, and textual instructions that specify not so much a "note" as a type of sound action (rustling, air, transition between voice and instrument, "broken" attacks, unstable fragments, etc.).

For percussion, I used "Quelle est Belle Company" whistles that imitate bird calls (Black-headed Gull, Pheasant, Nightingale, Redstart), as well as a superball on various resonant surfaces. I also used a bamboo stick and bowed it to imitate the sound of a daxophone. The didgeridoo acts as a long-lasting breathing resonator with continuous formant shifts. The bass flute and contrabass clarinet incorporate the performers' voices: breathing, whispering, vowels, "half-singing"; often in the work, the human voice and instrumental sound overlap, creating hybrid vocal-instrumental timbres.

An additional element is the sounds of the daxophone[43] on tape — an experimental sound object that creates quasi-vocal, "essential" timbres through friction on wooden plates. Combined with recordings of my voice (which undergo granular processing and resampling), this forms a spectrum of "almost-voices" that are difficult to unambiguously attribute to a human or other creature. I'm interested in sounds that behave as if they were alive: they breathe, tremble, and strain. At the same time, I don't want them to settle into a clearly defined identity. Rather than presenting recognizable sounds, I'm drawn to gestures that almost become— or move toward—something on the edge of recognition, something that is both vivid and foreign at once. This is where something uncanny begins. The listener hears something familiar (a sigh, a rasp), but the source remains uncertain: is it a human, an

[43]A daxophone is an experimental friction instrument invented by German composer Hans Reichel. It uses thin flexible wooden "tongues" (blades) that are clamped to a small resonating body; the player rubs the blade with a special friction device (the "dax") and can bend or damp the blade with the other hand. This produces highly variable, often voice-like timbres, squeaks, growls, and unstable pitches.

instrument, an animal? I like working inside this uncertainty because it makes listening more physical and more attentive. You start noticing not only pitch or rhythm, but also texture, pressure, proximity, and the feeling that the sound is arriving from somewhere within the space. All this creates a field of bio-sounds and quasi-bio-sounds in *ALIENATED*. In terms of R. Murray Schafer's acoustic ecology, the work can be described as an artificial soundscape in which “keynote sounds” and “signals” of various natures (human voice, mechanical organ, bird whistles, didgeridoo, daxophone) coexist within a single environment. Holophonic thinking allows us to perceive this multiplicity not as a montage of isolated layers, but as a single sound body in which each “species” occupies its own niche and simultaneously influences the entire field.

3.3. Space, electronics, and holophonic field

The piece is written for an 8-channel system, where each instrument, *Orguanous* sounds, and taped material permanently change their spatial position. Live instruments are amplified, and signal routing allows the timbre to be “detached” from the visible performer. The electronics have two levels: Live electronics intervene delicately, working with minimal timbral modifications (distortion, filtering). Its task is not to create an additional “layer,” but to bring out the hidden spectral qualities of live sound, to enhance the feeling that the sound “breathes” within the space. Fixed media (tape) is based on field recordings processed by granular synthesis and resampling. Tape sources: recordings of various percussion objects, a daxophone, a superball on different surfaces, fragments of my voice. The electronic layer constantly “mirrors” the acoustic one, but in a distorted, temporally stretched, spectrally thickened form.

According to the mechanisms of auditory scene analysis described by Albert Bregman, the auditory system constantly “decides” whether the frequencies heard belong to one sound object or to different ones, forming streams and background.[44] The holophonic effect occurs when multiple sources — acoustic and electronic — are perceived not as independent layers, but as frequencies and micro-events of a single larger sound organism.

Spatial movement (slow rotation around the listener, diagonal transitions, sudden “approaches” of individual channels) becomes part of the texture, as fundamental as rhythm or harmony. In this sense, I “orchestrate” not only instruments and electronic processes, but also the space itself. This is in line with Grisey's idea of composition as “sound sculpture in

[44]Cf. Albert S. Bregman, *Auditory Scene Analysis. The Perceptual Organization of Sound*, Cambridge, MA: MIT Press 1994, p. 24–176.

time," [45] which in holophonic thinking can be extended to "sculpture in time and space."

3.4. Form and layered oppositions

The form of *ALIENATED* is determined not so much by changes in thematic elements as by the transformation of texture types, the relationship between the holophonic and the homophonic, and their spatial arrangement. In the most general terms, it can be described as a movement through three related states: the initial establishment of the holophonic field - at the beginning, a dense but fragile sound environment is gradually formed, in which *Orguanous*, ensemble, didgeridoo, and electronics interact mainly at the spectral level: rustles, breaths, quasi-vocal intonations, bird whistles, and organ noises merge into a single field. The mechanisms of spectral fusion described by Stephen McAdams are at work here: the commonality of attacks, the harmonic similarity of frequencies, and the shared dynamics result in the multitude of sources being perceived as a single complex timbre.[46]

The appearance of a homophonic-tonal episode (D, bar 67) — in the central part, there is an episode where the texture partially "delaminates": a relatively stable center of pitch emerges, around which other sounds are grouped, the melody in the voices is scattered, but tries to somehow "come together" into a single line. After this episode concentrates around the organ and electronics: their role is to create a more "tonally" recognizable foundation that contrasts sharply with the previous holophonic state. In the conceptual framework of alexithymia and auditory agnosia, this moment is for me an attempt to "gather" the system into an understandable, intoned form, to reduce the undefined affective mass to a melody, to something that can be named.

After this episode, a fundamental break occurs (E, bar 96): the organ and electronics continue to maintain a relatively stable homophonic-tonal basis, while the instruments return to a holophonic texture. A double reality emerges: on the one hand, a more "fixed" vertical center (*Orguanous* + electronics), and on the other, a blurred, dynamic, scattered ensemble layer that lives by the logic of holophony. For me, this phase is a moment of conflict between the desire for an orderly structure and a mode of sensory oversaturation that cannot be reduced to a single line and does not want to "fit" into it.

In the auditory experience, this contrast is felt as a sliding between two modes: the homophonic-tonal foundation functions as a kind of "anchor," while the ensemble layer acts

[45]Cf. Grisey, Gérard: "Tempus ex machina: A Composer's Reflections on Musical Time," in: *Contemporary Music Review* 2/1 (1987), pp. 239–275.

[46]Cf. Stephen McAdams, "Spectral Fusion and the Creation of Auditory Images," in: *Music, Mind, and Brain: The Neuropsychology of Music, ed. Manfred Clyne*s, New York: Plenum Press 1982, pp. 279–298.

as a constant resistance, like a field that refuses to be completely organized around a single center. The holophonic “body” and the tonal “skeleton” coexist, but do not coincide.

At F (bar 177), the ‘tonal’ motif returns in the instruments. At the end, an important shift takes place: the motifs of the homophonic-tonal episode are transferred to the instruments. The orchestral fabric begins to echo the same “normal” melodic attempt, but in a weakened, fragmentary form. Now the tonal logic is no longer supported by the mass of the organ and electronics — on the contrary, it sounds like a fragile remnant within a sound body that essentially remains holophonic. To me, this sounds like an even weaker attempt at integration: the structure that once seemed “normal” (the homophonic- tonal episode) now appears only as traces in live instruments, without the powerful support of *Orguanous* and electronics. From a psychological perspective, this is an attempt to embed “normality” into a field that has long been governed by different laws, an attempt that turns out to be more of a gesture than a real transformation.

Thus, the formal movement of *ALIENATED* can be read as a sequence: holophonic field → emergence of a homophonic - tonal “island” → simultaneous coexistence and opposition of the homophonic-tonal basis and holophonic fabric → transfer of the tonal motif to instruments and its gradual dissolution. All this articulates the tension between integrity and fragmentation, between the desire for a recognizable form and the experience of alienated, overloaded sensuality.

3.5. Notation, media, and temporality

Another dimension of *ALIENATED* is related to the issue of notation and representation of the holophonic structure. In the score, extended instrumental techniques, microtonal pitching and graphic notation are used; text instructions that specify the quality of sound (such as fragile, broken, almost voice, blurred pitch, etc.) and thus indicate not only to the acoustic result but also to the intended affective character of the sound in the listener’s perception. At the same time, I deliberately do not write down the MIDI part of *Orguanous*, the tape structure, and all the live electronics settings in the score. All these elements exist as a patch in Ableton 12: it contains signal routing, automation, panning, etc. The ensemble plays to a click track that synchronizes the live performance with the internal logic of the electronic layer, so I don't see the need to duplicate these processes in the form of traditional notation. I understand that this method does not guarantee the “longevity” of the work in an archival sense: in twenty years, the specific version of the software, session format, and hardware

conditions may no longer be available. But this decision is in line with my general philosophy: I write works for specific ensembles and specific situations, and very often the first performers remain the only ones. I am not interested in multiple, standardized performances, but rather in several intense encounters with the work over time. If two or three years pass, the sound usually ceases to be relevant to me — not because it is "bad," but because I perceive my own creativity as a kind of diary.

In this dimension, each piece is a point reflection of my current psychological state, a way to capture a specific configuration of perception, body, attention, anxiety, alienation. The holophonic approach here becomes not only a technique for organizing sound, but also a form of recording — not only musical, but also existential. In this sense, everything that is left outside the score — patch settings, the specific acoustic properties of the space, the individual intonations and habits of the musicians — also belongs to this broader "recording" of the work as a lived situation. That is why I do not seek to make *ALIENATED* a "repertoire piece": it is embedded in its moment and its performers as much as in its holophonic structure.

4. Conclusions

This master thesis arose from a practical, perceptual puzzle: much contemporary music for ensemble and electronics does not quite "behave" as monophony, homophony, or polyphony, even when it is notated in conventional ways. Rather than following clearly interacting voices, listeners are drawn to large textures, dense layers, and spatial configurations. From this observation, the idea of "holophony" emerges as a useful way to describe and create such music: it focuses on sonic configurations that are perceived as perceptual units while preserving internal diversity. At this point, it is necessary to return briefly to the meaning of the term *holophony* itself. Panayiotis Kokoras originally introduced it to describe musical textures in which multiple micro-events, gestures, and timbral nuances fuse into a single coherent sonic entity — a "holophonic musical texture."[47] In his view, the emphasis lies on perceptual fusion and the formation of a unified sound body whose internal variety remains perceptible but subordinate to the whole. My use of the term, while rooted in Kokoras's formulation, extends it beyond its purely psychoacoustic and textural sense toward a

[47]Panayiotis Kokoras, *Towards a Holophonic Musical Texture*, in: *Journal of Music and Meaning* 4 (2007) [online available: https://panayiotiskokoras.com/texts/P.KOKORAS%20-%20Towards%20a%20holophonic%20musical%20texture.pdf, date of access: 15 December 2025].

compositional and phenomenological one: holophony as a way of thinking and of listening that connects psychoacoustic mechanisms with ecological, spatial, and embodied experience. In this thesis, therefore, holophony unfolds across several dimensions — technical (the organization of sound), perceptual (the listener's grouping and fusion of stimuli), ecological (the coexistence of multiple agents in one field), and experiential (the composer's and listener's embodied immersion). Making these meanings transparent clarifies that *holophony* is not a single fixed category but a plural, evolving concept that adapts to the context in which it is used.

The first three chapters clarified several aspects of this idea. By tracing the transition from line-based thinking to approaches centered on sound fields in the twentieth century, holophony as an idea was formulated in the sense of a continuation and crystallization of tendencies already present in micropolyphony, stochastic methods, spectral composition, and electroacoustic theories of sound objects and spectromorphology. The point is not to posit an entirely new aesthetic, but to name a family of practices in which the identity of the whole takes precedence, and local elements acquire meaning through their place within that whole.

Psychoacoustic research anchored this intuition on the level of perception: descriptions of how the auditory system fuses, separates, and organizes sound provide a concrete basis for understanding how holophonic textures can be stabilized or, conversely, destabilized in a composition. Bringing in the concepts of soundscape and ecoacoustics moves holophony beyond a purely studio-based context: it can be understood as an artistic model of environments in which multiple agents — human and nonhuman, instrumental and electronic — share a single acoustic space. Phenomenology and enactive theories, together with notions such as alexithymia and auditory agnosia help to describe and theorize that these environments are always experienced from within, by embodied listeners — including the composer — whose interpretive capacities may not keep pace with the sheer intensity of sensation.

Against this backdrop, *ALIENATED* became a tangible testing ground. Conceived for organ, ensemble, and electronics, the piece functions as a laboratory for holophony—not as an abstract slogan, but as a set of deliberate compositional decisions. *Orguanous's* unstable, "airy" sound, the use of extended techniques, the interplay of human and quasi-animal voices, and the eight-channel spatialization all blur the boundaries between sources. The tension between the emerging "homophonic-tonal" episode and the surrounding holophonic fabric makes it possible to explore how recognizable structures can operate as alien bodies within a texture that resists codification, and how efforts at "normalisation" remain incomplete or

unsuccessful.

Another important result concerns notation and temporality. By leaving the electronics and the behavior of *Orguanous* in the domain of software and patches, not fully encoded in the score, the work effectively acknowledges that *ALIENATED* is tied to specific technologies and performance conditions. To some extent, this reflects a broader view of compositional practice as situational and temporally bounded. Each work captures a particular constellation of instruments, collaborators, spaces, and states of mind, rather than striving for a neutral, infinitely reproducible version. In this light, holophony appears not only as a method of organizing sound in the moment, but also as a way of recording how a particular sound world was experienced and "inhabited" at a particular time.

Inevitably, this study has its limitations. The repertoire considered is selective (centred mainly on *ALIENATED*), and the discussion of perceptual mechanisms remains largely theoretical, not supported by empirical listening experiments. The analysis of my own work is necessarily partial and colored by the composer's perspective. At the same time, the thesis points towards several promising directions: comparative studies of holophonic strategies across different composers and traditions; collaboration with psychoacousticians and cognitive scientists to investigate how listeners actually perceive such textures; and further compositional projects that explore holophony under diverse spatial, instrumental, and technological constraints.

Ultimately, in this work holophony functions less as a rigid category than as a lens: a way of observing how multiplicity and unity interact in contemporary ensemble-electronic music, and, at the same time, a way of structuring compositional practice within that interaction. If this thesis contributes to a clearer language for such a lens and opens possibilities for others to reflect on their listening and composition in similar terms, it will have achieved its purpose.

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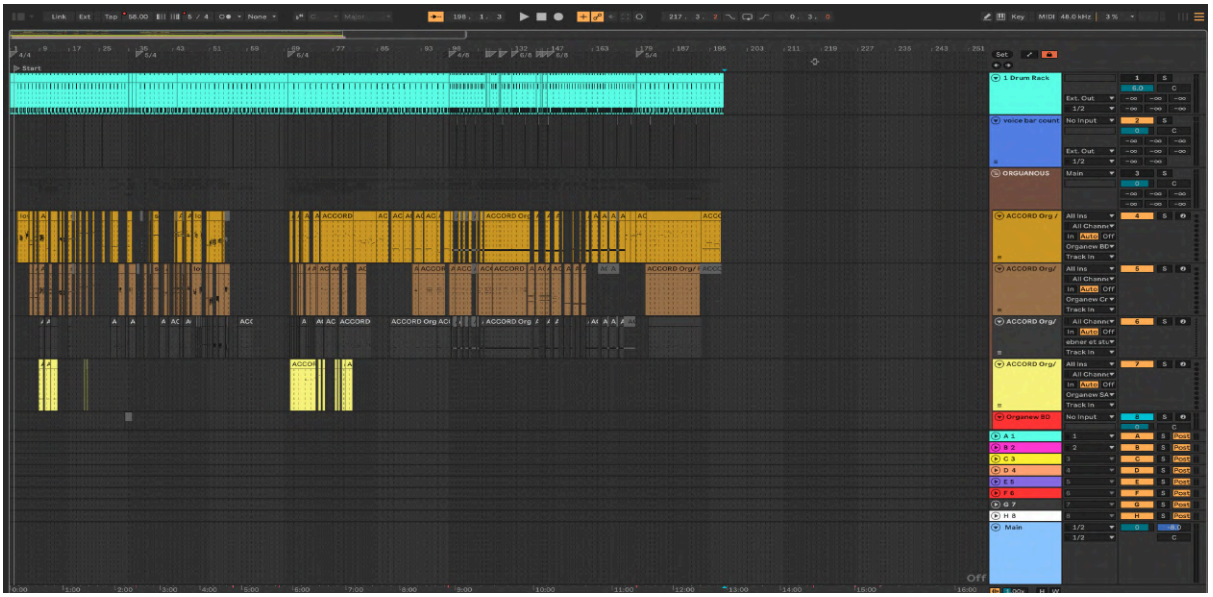
Appendix 1. Additional Photographs

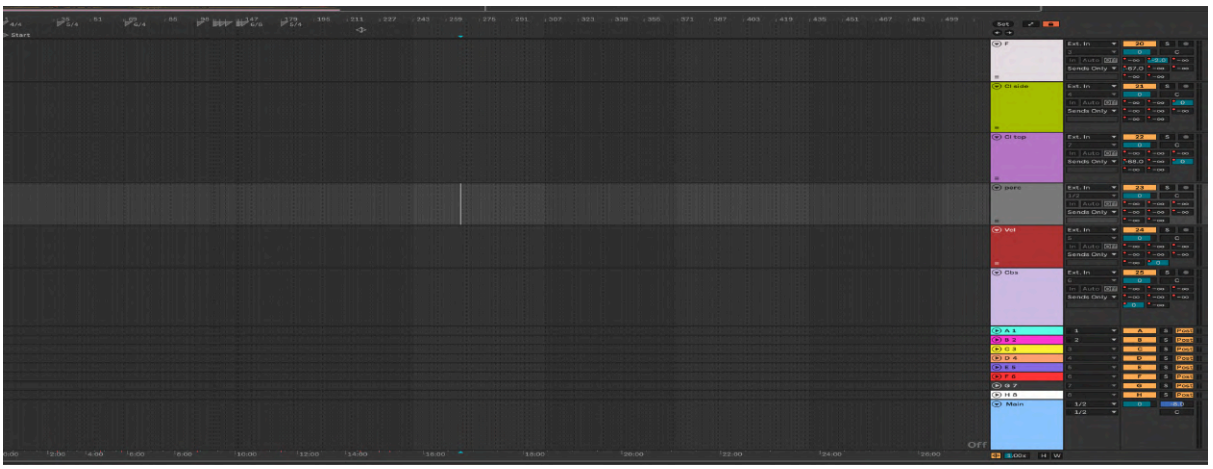


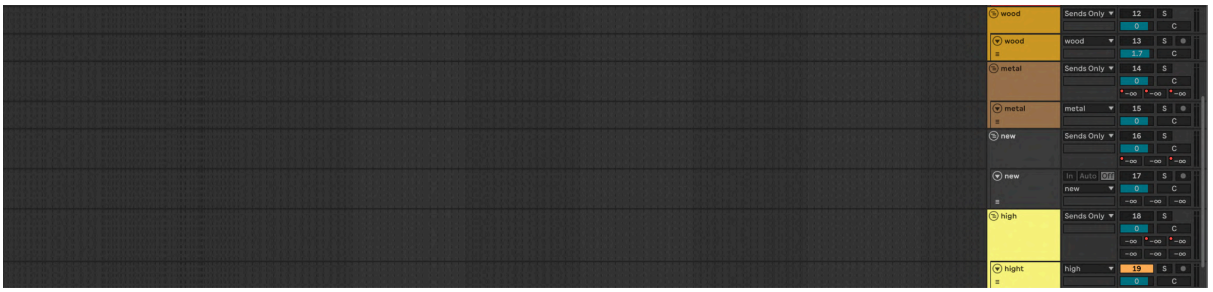


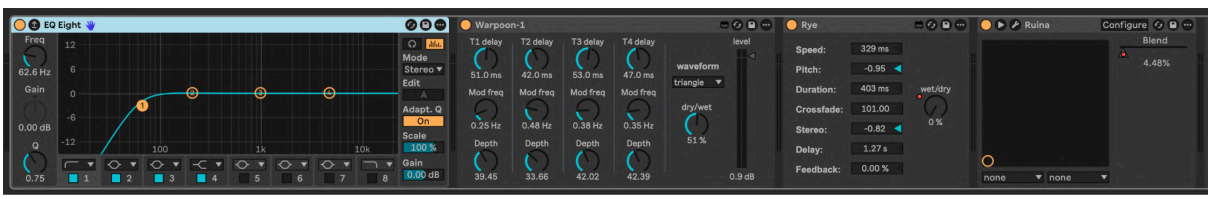
Festival Présences 2025, photos by Raphael Siefert

Appendix 2. Ableton Live 12 Project Screenshots

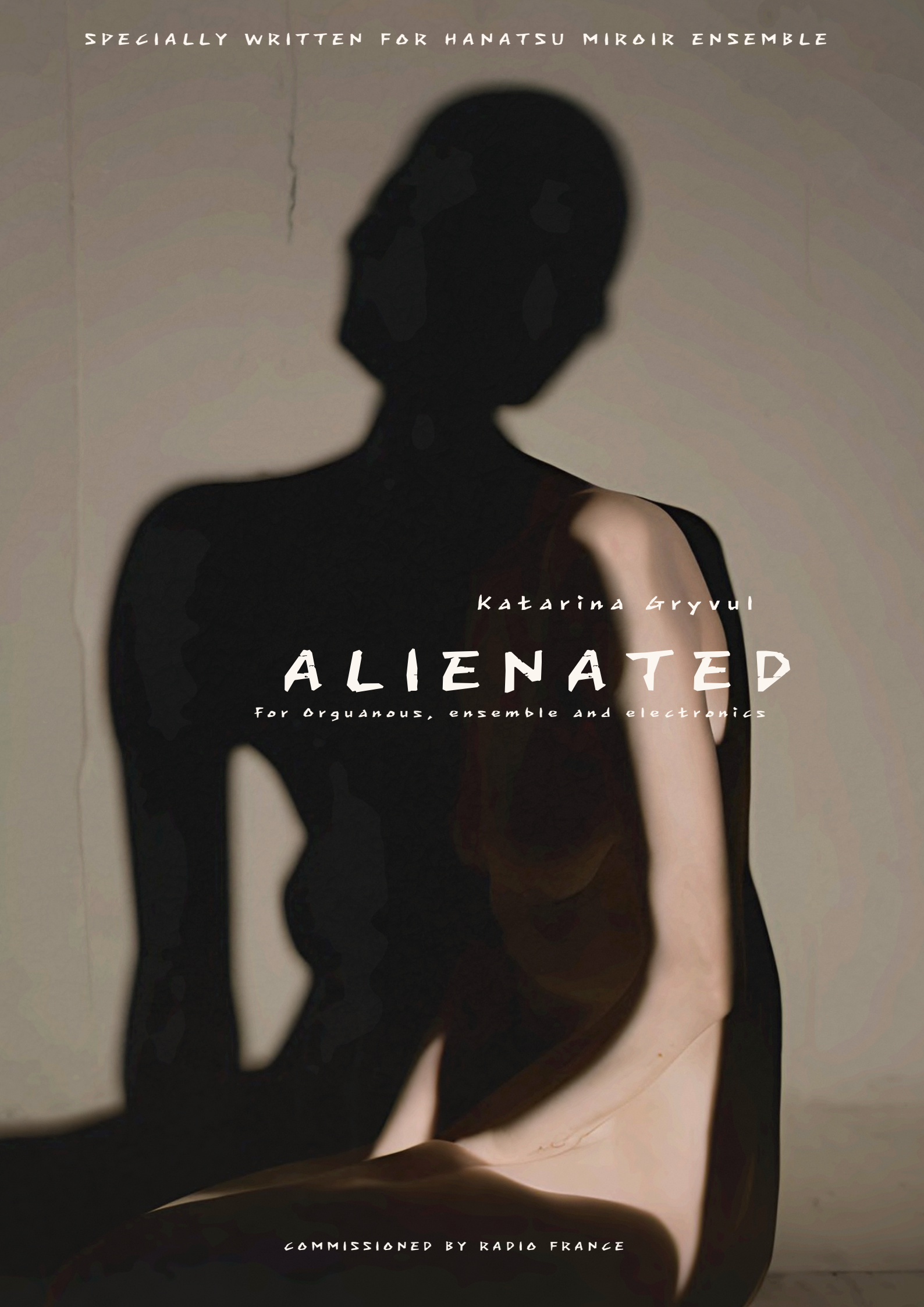








SPECIALLY WRITTEN FOR HANATSU MIROIR ENSEMBLE



Katarina Gryvul

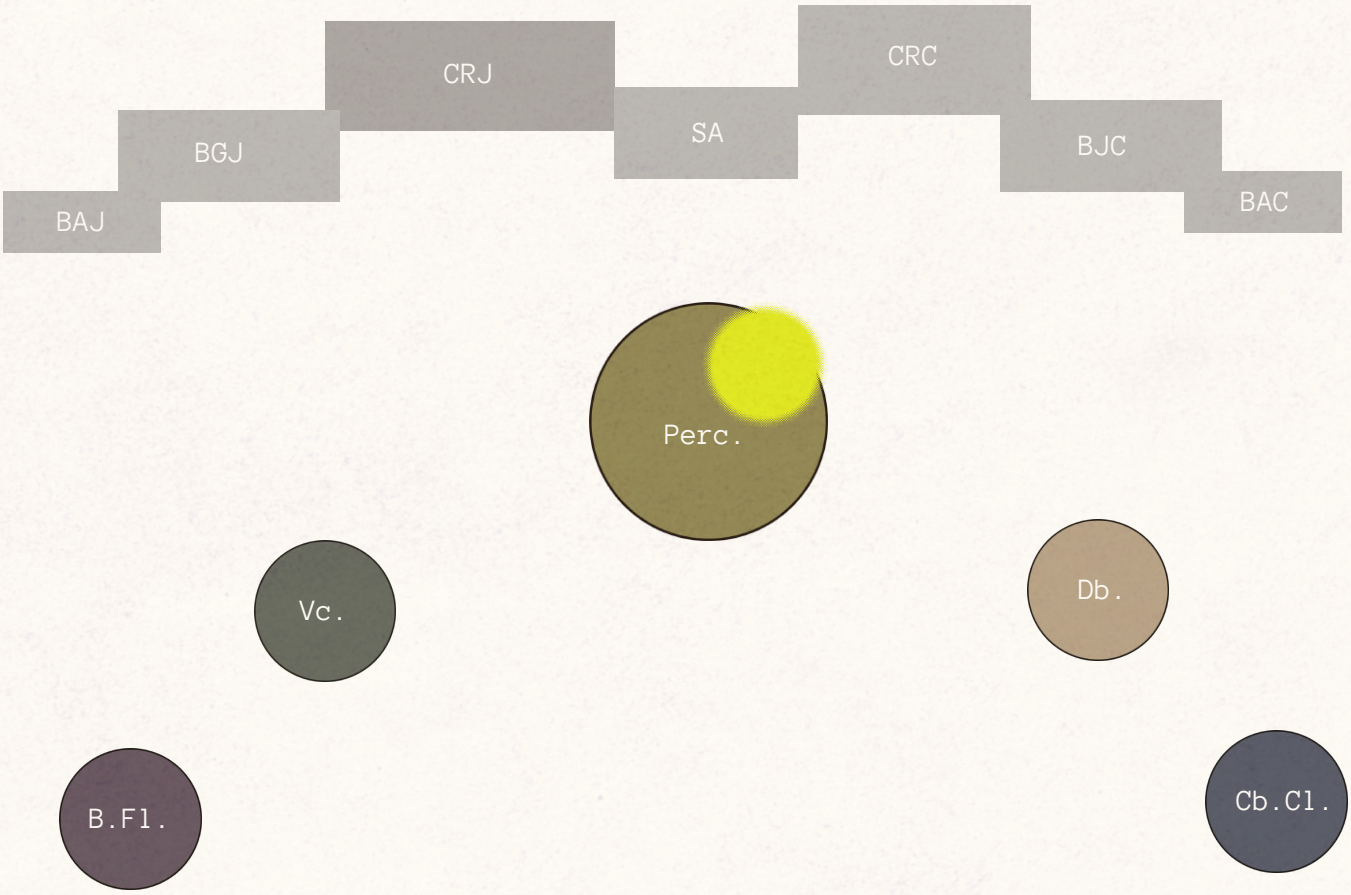
ALIENATED

For Orguanous, ensemble and electronics

COMMISSIONED BY RADIO FRANCE

This piece explores the intersection of alexithymia—a psychological state marked by challenges in identifying, understanding, and expressing emotions—and auditory agnosia, a neurological disorder in which individuals lose the ability to recognize and interpret sounds despite normal hearing. Using this framework, it delves into how emotional detachment and sensory disconnection create a layered experience of psychological and auditory ambiguity through sound.

Position of the ensemble



Percussion setup:

Timpani 29'
Cymbal 16' (on timpani)
Meinl DDG-BOX Travel Didgeridoo
Aztec Jaguar Whistle

Quelle est Belle Company:
Black-headed Gull
Pheasant
Nightingale
Redstart

Mallets:
Dreadlock
Superball (30cm fiberglass stick with a 3-4cm rubber ball cut in half)
Drumsticks
Plastic brush
Bamboo knitting needle (35cm/4mm)

other:
Electric teeth brush
CD (2)

Instruments setup:

Vc. and Db.
Video tape (1)
Cassette tape (1)
Superball mallets - 30cm fiberglass stick with a 3-4cm rubber ball cut in half (2)

*ORGUANOUS PART, LIVE ELECTRONICS AND TAPE ARE NOT INCLUDED IN THE PARTITURE

PARTITURE IS TRANSPOSED

INSTRUMENTATION:

BASS FLUTE

CONTRABASS CLARINET

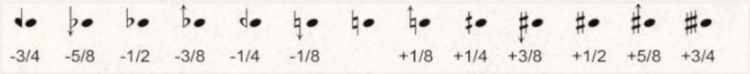
PERCUSSION
timpani 29'
cymbal 16'
objects

VIOLONCELLO

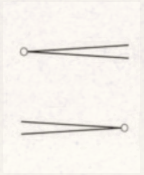
CONTRABASS

If you have any questions, please contact the composer - **katarina.gryvul@gmail.com**

GENERAL



→ the arrow indicates either a gradual change of effect or the continuation of some action



cressendo from silence

decrescendo to silence



as fast as possible



Unstressed note: schould be significantly weaker than normal note

all tremolos, trills, and bisbigliandos should be performed in an irregular rhythm and as quickly as possible

all sounds should incorporate more breath and noise, with a pastel and sandy texture

If you have any questions, please contact the composer – **katarina.gryvul@gmail.com**

BASS FLUTE

\+ inhale

\− exhale

fully pitched sound

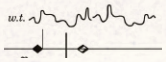
airy pitched sound

fully closed embochure

fully opened embochure



key clicks:
always play random with irregular speed
and different dynamics



whistle tone – freely



jet whistle, try to play less bright with
more air



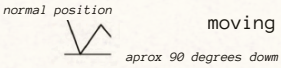
only air (in genenerally combined with
“closed embochure”)



flutter tongue



tongue ram



moving position of a flute

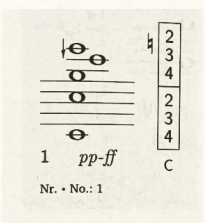


start from the lowest fried sound possible to
the highest and back

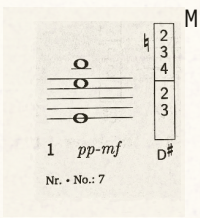


Sing on the instrument in a comfortable octave, trying to use different techniques–like trumpet with tight lips, in a breathy style, and strange sounds you would be embarrassed by

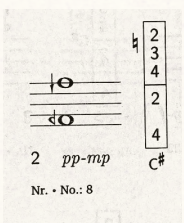
Multiphonics from Carin Levine/Christina Mitropoulos-Bott



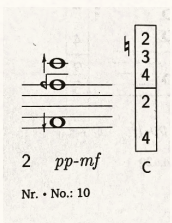
M1



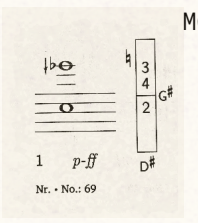
M7



M8



M10



M69

CONTRABASS CLARINET

\+ inhale
\− exhale



key clicks:
always play random with irregular speed and different dynamics



only air , witout mouth piece(in genenerally combined with “closed embochure”)



flutter tongue



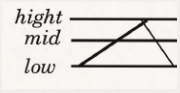
triangle shape note - slap



start from the lowest fried sound possible to the highest and back



sing on the instrument in a comfortable octave, trying to use different techniques—like trumpet with tight lips, in a breathy style, and strange sounds you would be embarrassed by



spectral overtones glissando between three registers: low, mid, and high



growl, distort the note with voice, rough, brutal

PERCUSSION

Mallets and objects:


plastic brush


dreadlock

bow

bamboo knitting needle


superball


vibrator


CD discs are threaded onto drumsticks. 1 CD per 1 drumstick


play on the edge of the timpani


just demonstrating approximate movements, which are ad lib.

Percussion setup:
Timpani 29'
Cymbal 16' (on timpani)
Meinl DDG-BOX Travel Didgeridoo
Aztec Jaguar Whistle

Quelle est Belle Company:
Black-headed Gull
Pheasant
Nightingale
Redstart

Mallets:
Dreadlock
Superball (30cm fiberglass stick with a 3-4cm rubber ball cut in half)
Drumsticks
Plastic brush
Bamboo knitting needle (35cm/4mm)

other:
Electric teeth brush
CD (2)

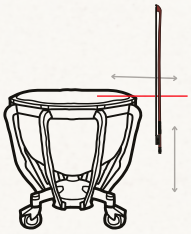
\+ inhale
\- exhale


play with a plastic brush on the metal bowl of the timpani to create an irregular textured noise with slight harmonic sounds

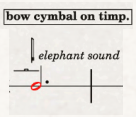

place approximately half of a bamboo knitting needle on a timpani. On the other half, play with a bow. While playing, continuously (ad lib.) move the needle backwards (the graphic above) and forwards to create daxophone sounds, use different bow pressure ad lib.


circular bowing without moving the bamboo knitting needle. The sound should mostly resemble white noise


place approximately half of a metal part of dreadlock on a timpani. On the other half, play with a bow on the metal part. While playing, continuously (ad lib.) move the dreadlock backwards and forwards to create a squeaky sound, using different bow pressure ad lib




Slowly drag drumsticks with CDs on them from the center of the timpani membrane to the edge to create the sound of an engine. Avoid jerking the sticks. Pedal - ad lib.



half cymbal on timpani, while bowing, move the cymbal towards the center of the timpani to create an “elephant” sound

sound example 4


close the bell of the instrument with your hand


open the bell of the instrument with your hand

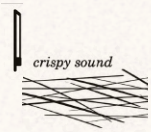
STRINGS



white noise sound
no pitch

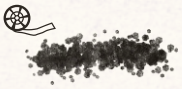


play on tail piece with a bow on indicated place
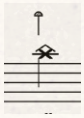


crispy sound – bow under fingerboard –slowly wrap and roll the hair from the bow right/left to get crispy sound

sound example 1



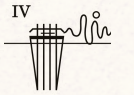
tie the tape (cello – cassette, contrabass – video) onto the II string (a few pieces of at least 40-50cm each) and pull it with one hand, while using the other hand to draw a bow on the tape. The intensity is approximately plotted on the graph.

video example 1 (demonstrated on violin, but the principle is the same)

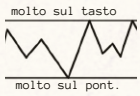


play with the superball on the body of the instrument to create a 'singing' sounds





irregular harmonic glissandos on the IV string above the fingerboard, with very light pressure. Try to produce a sound resembling a whistle tone on the flute



vertical cracking bow, irregular with different (ad lib.) bow speed

- III and IV string
- dumped strings on the left hand
- important – the produced sound should not have a pitch

M.S.T – molto sul tasto
S.T. – sul tasto
M.S.P. – molto sul pont.
S.P. – sul pont.



scratch tone (overpress)



no scratch tone

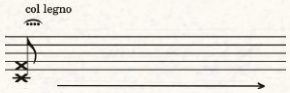
gradual overpressure of a bow



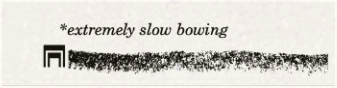
note in the circle – half finger pressure



diamont shape note – light finger pressure



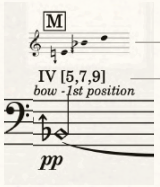
col legno with jeté, ricochet as fast as possible, irregular, try to play it in different part of the bridge and finger board, to create nice texture, left hand always dump strings
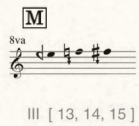


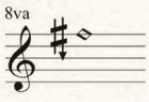
ccratch tone on indicated strings; bow position: playing on the fingerboard; left hand: damp the strings

VIOLONCELLO

all multiphonics are taken from
https://cellomap.com/multiphonics-basics/
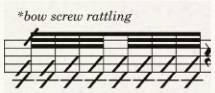






CONTRABASS

4-string contrabass

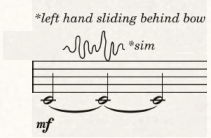


Col Legno Wood Buzz – placing the wood of the bow into a vibrating string (after pizz)

sound example 1

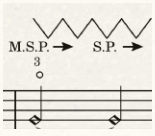


move the bow screw as fast as possible between the indicated strings while also changing the position of the bow screw (S.T- M.S.T.) randomly.



slide up and down with your left hand behind the bow on the bridge to create sounds that resemble the spectral multiphonics glissando of abass clarinet

sound example 2

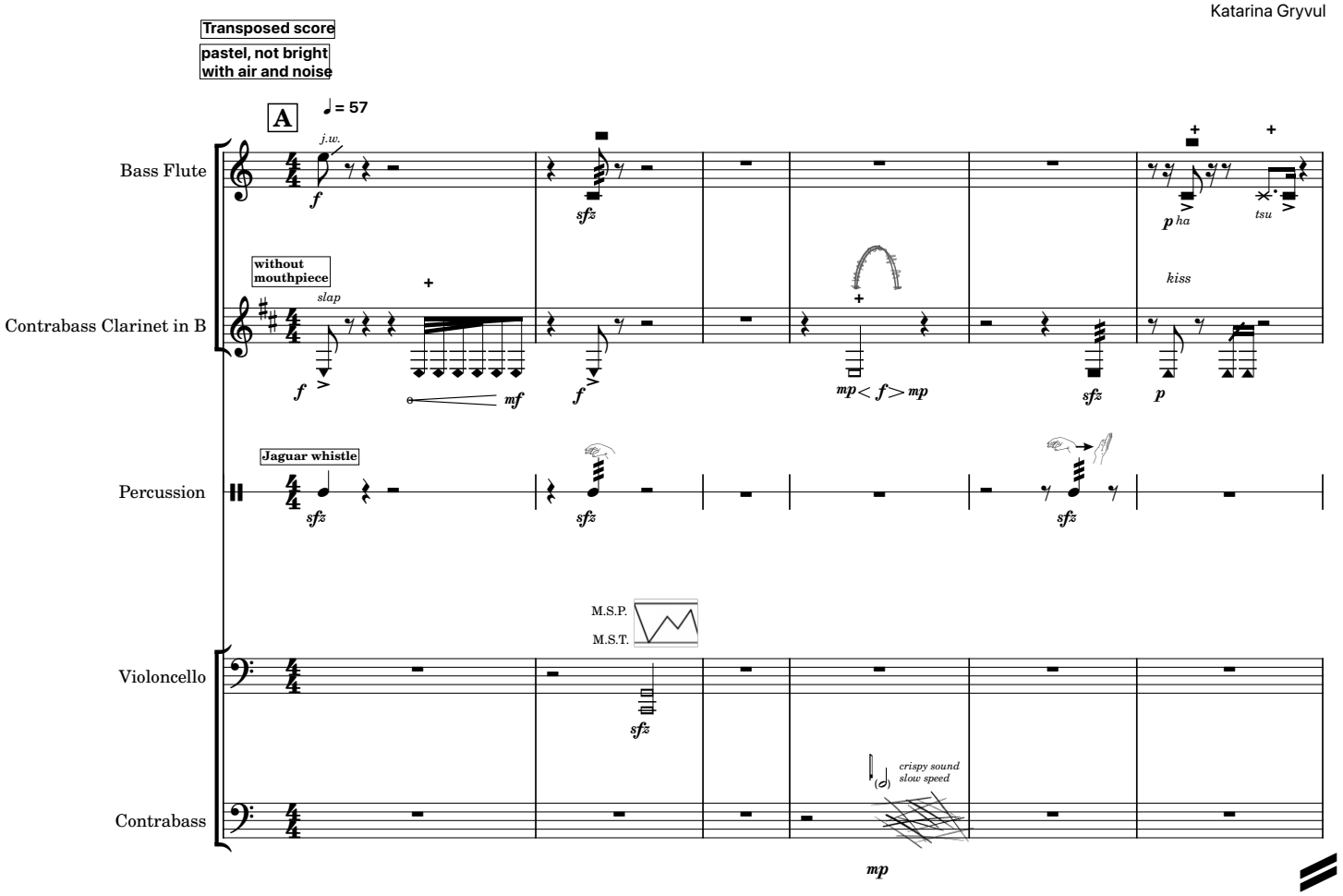


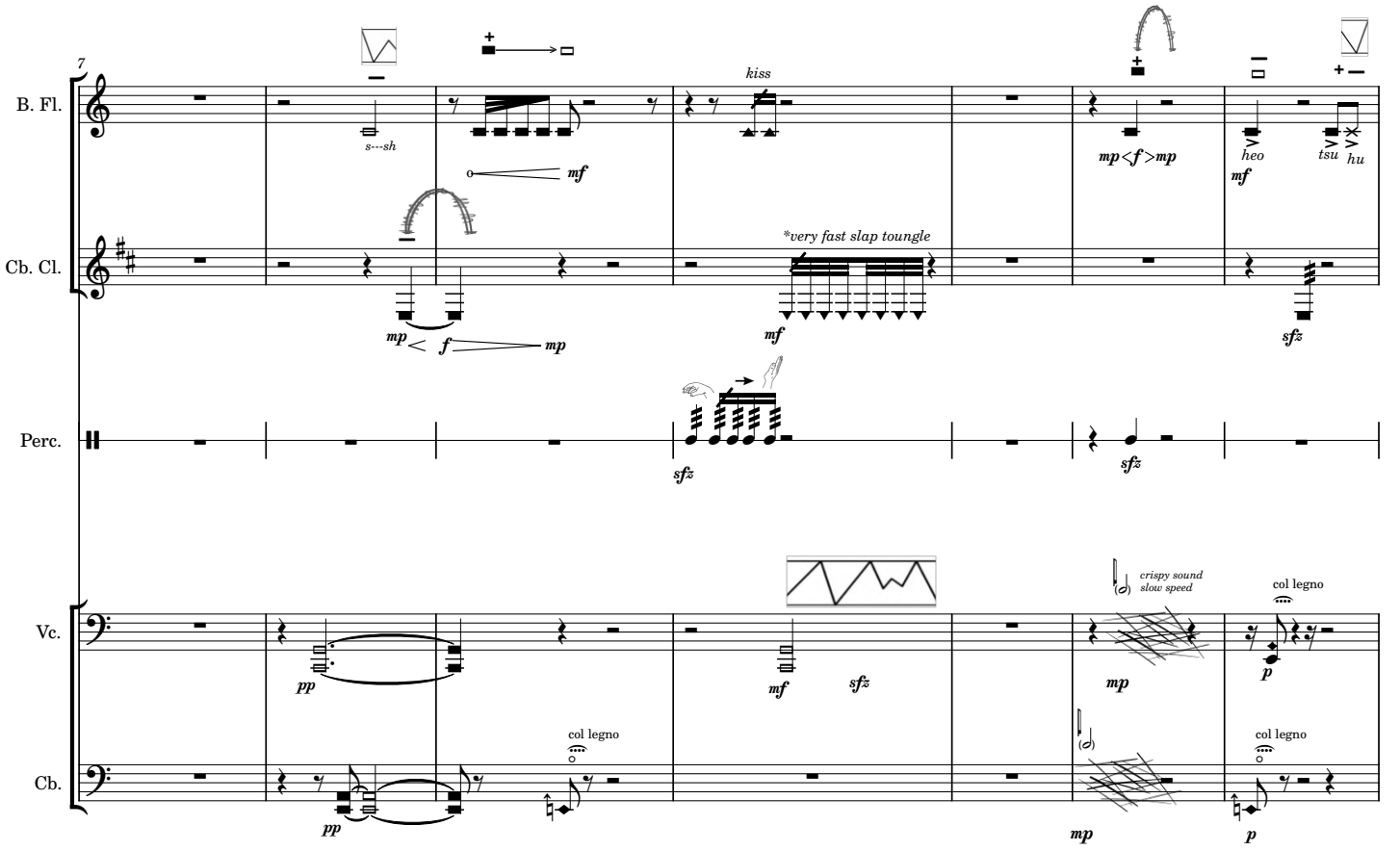
Light finger pressure, very wide vibration, but the finger of the left hand should not be on the string but should touch the right side of the string

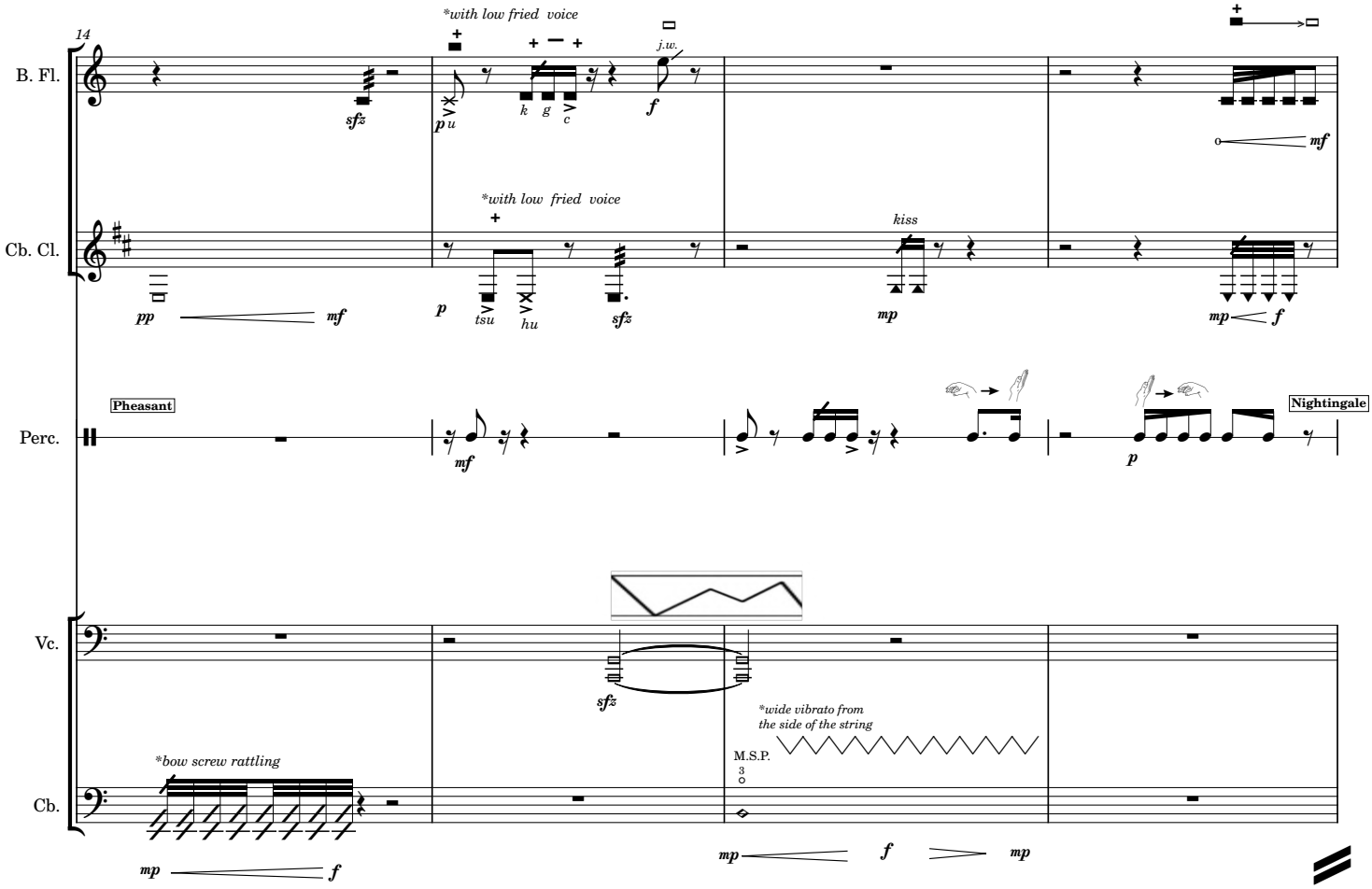
sound example 3
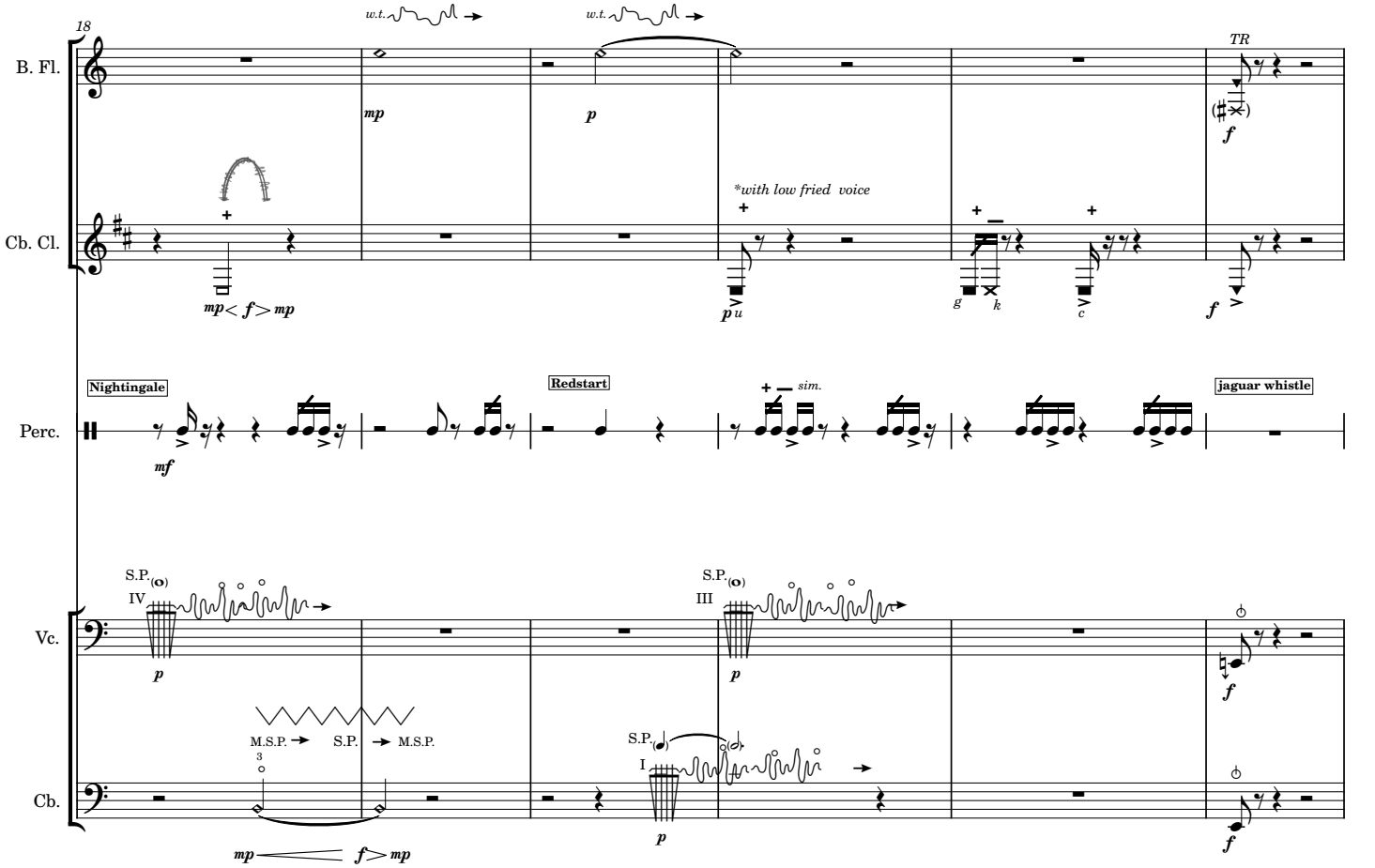
ALIENATED

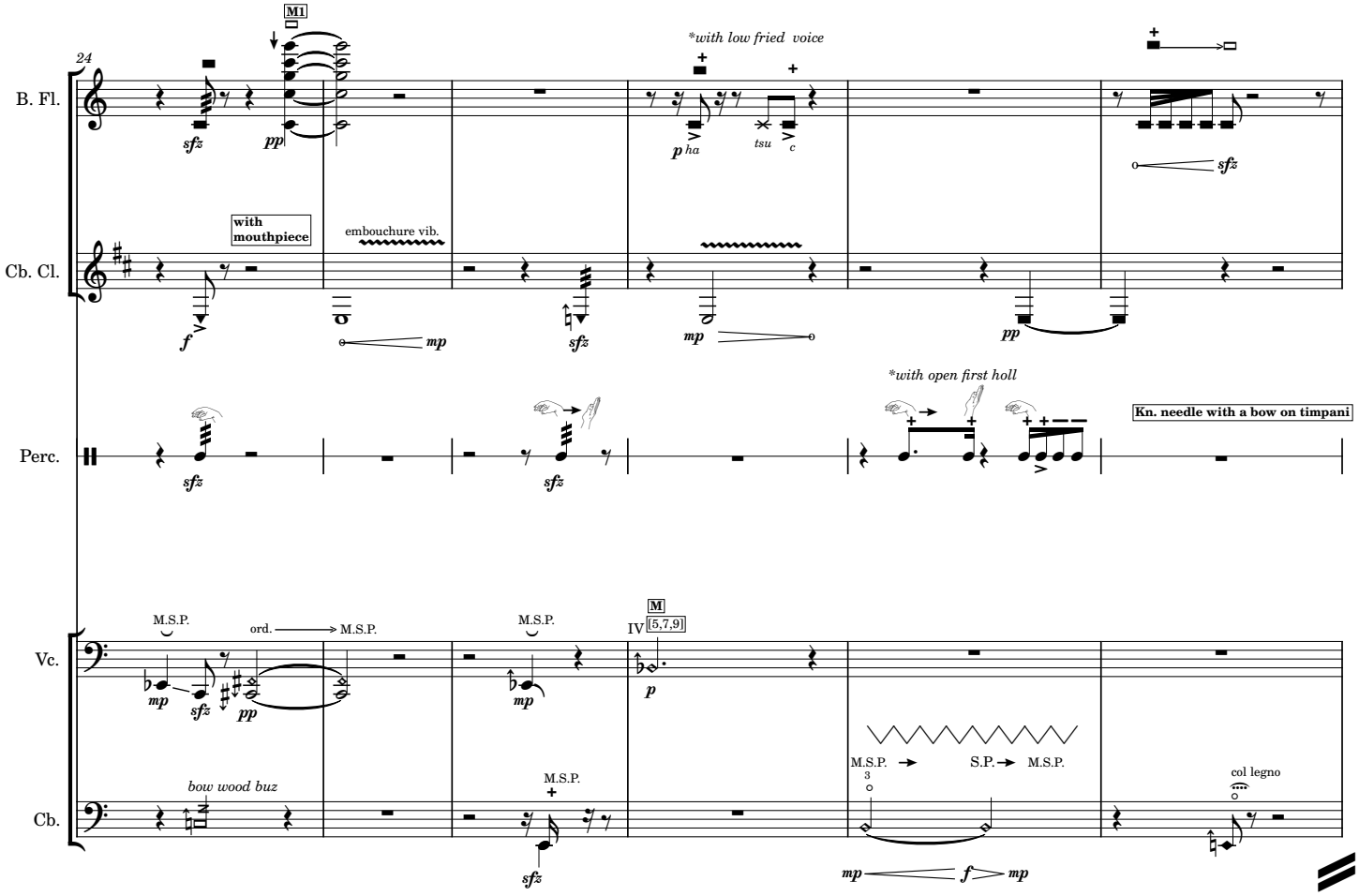
Katarina Gryvul
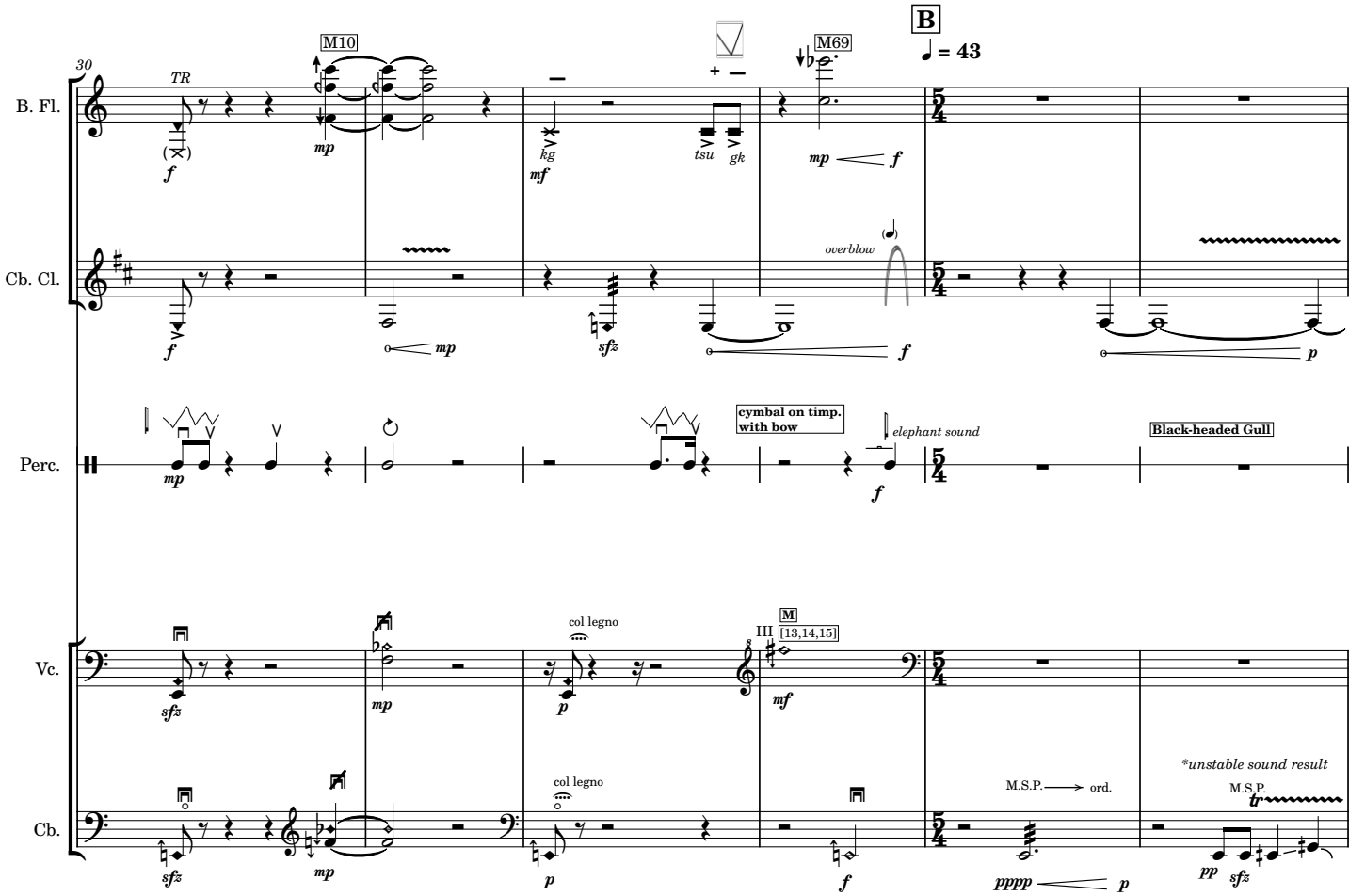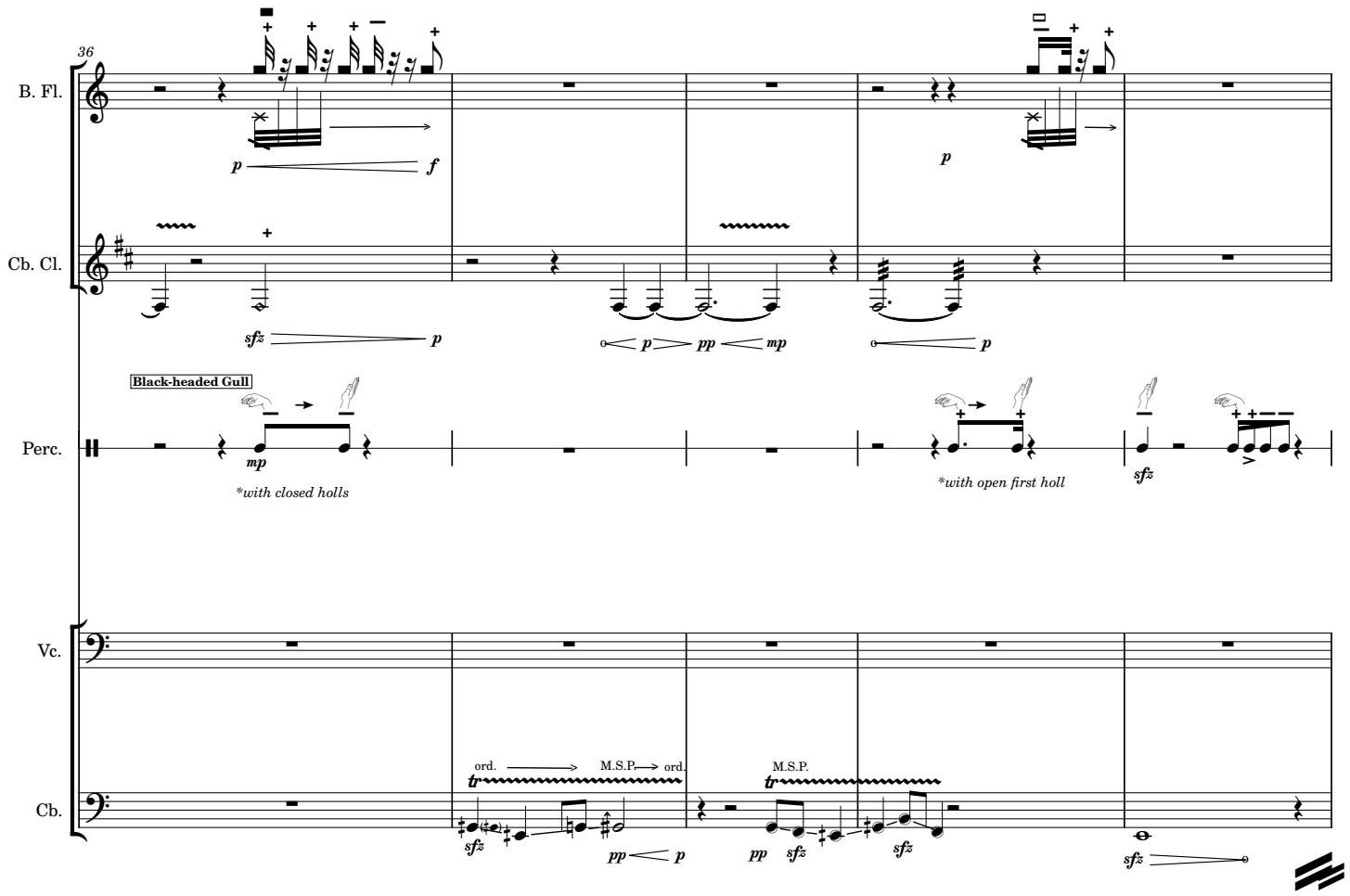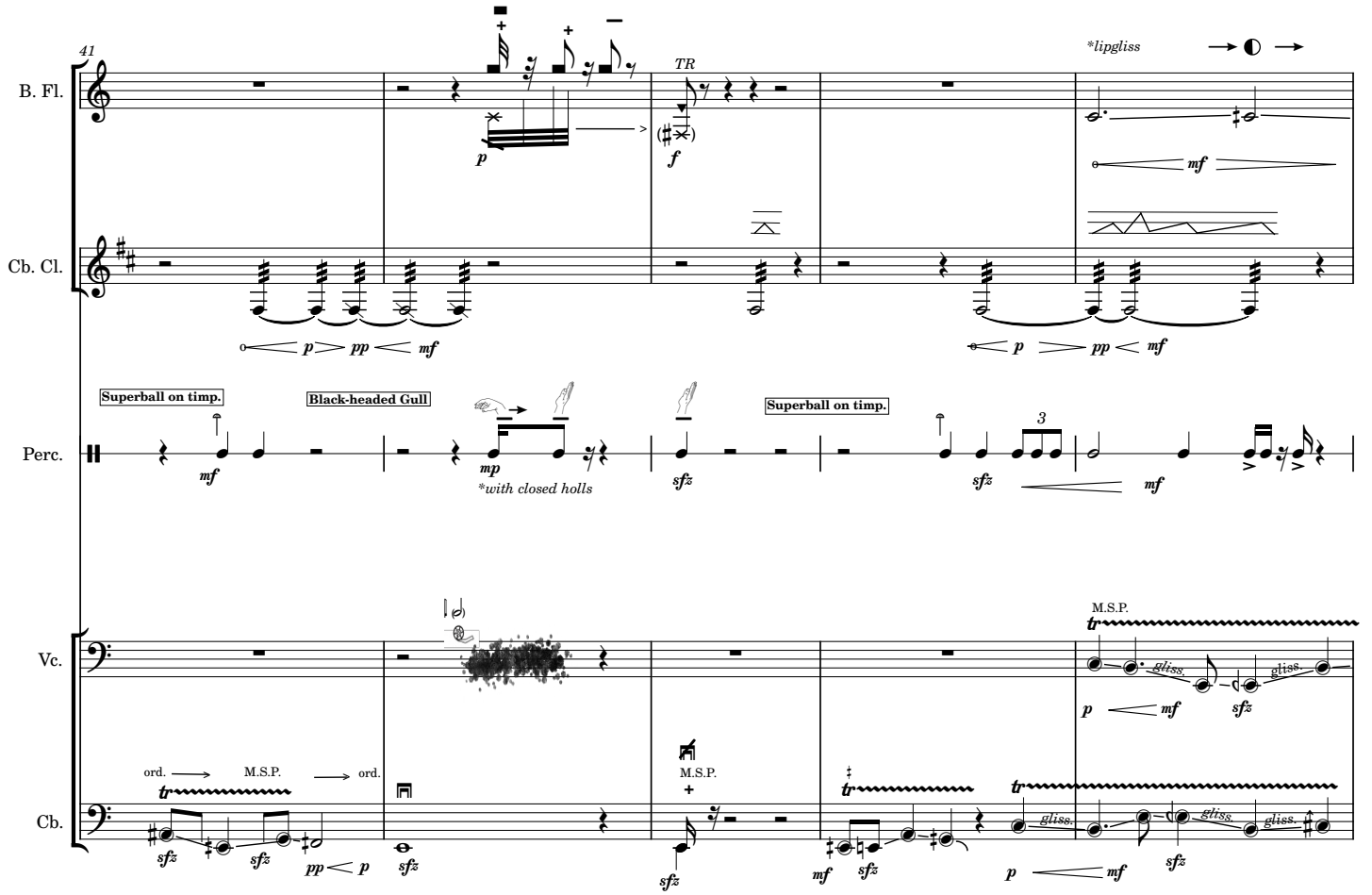





14
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
*with low fried voice
*with low fried voice
kiss
Pheasant
Nightingale
*bow screw rattling
*wide vibrato from
the side of the string
M.S.P.
j.w.
k g c
tsu hu

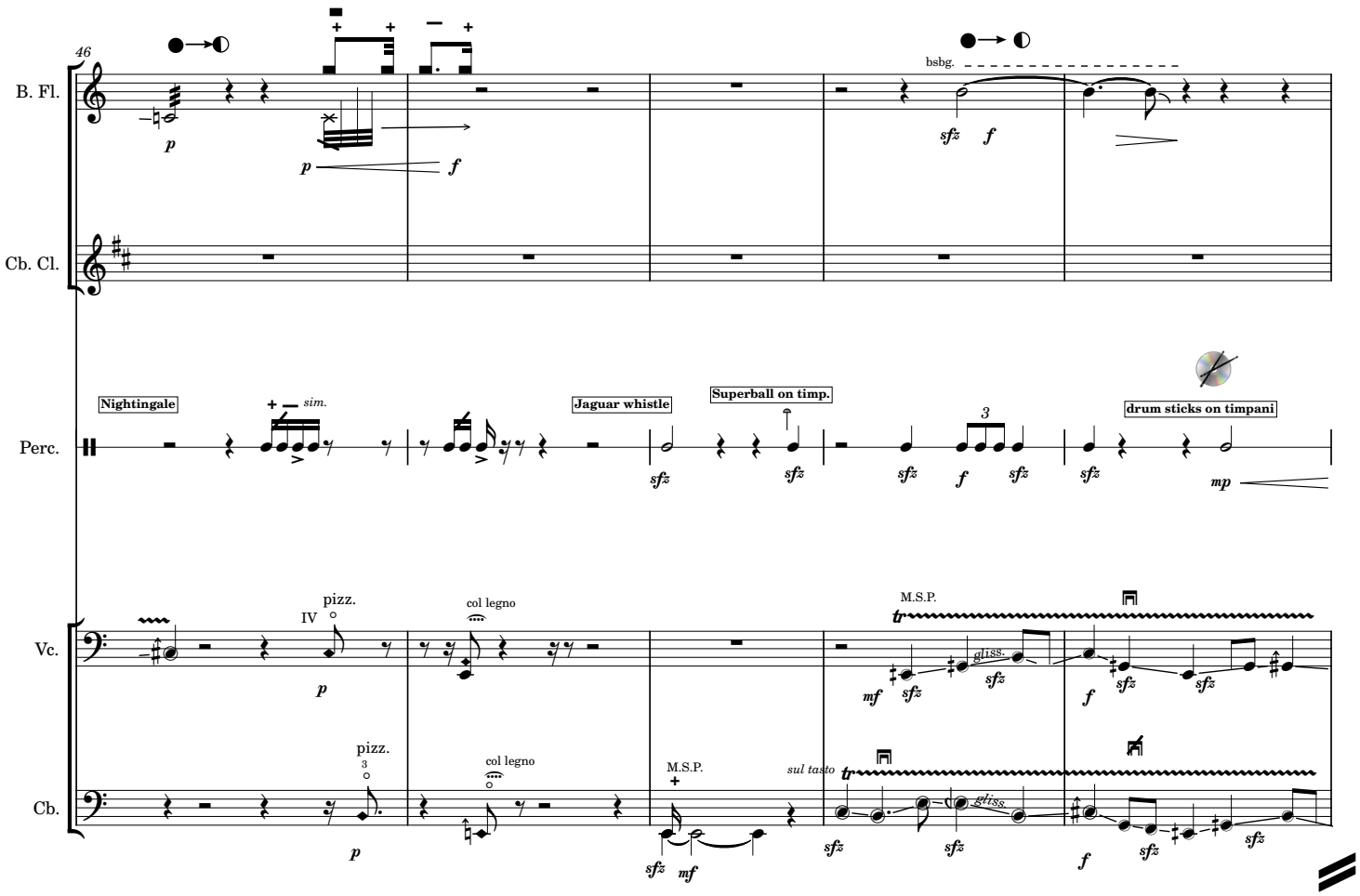

18
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
w.t.
w.t.
TR
*with low fried voice
Nightingale
Redstart
sim.
jaguar whistle
S.P.
IV
III
I
M.S.P.
S.P.
M.S.P.
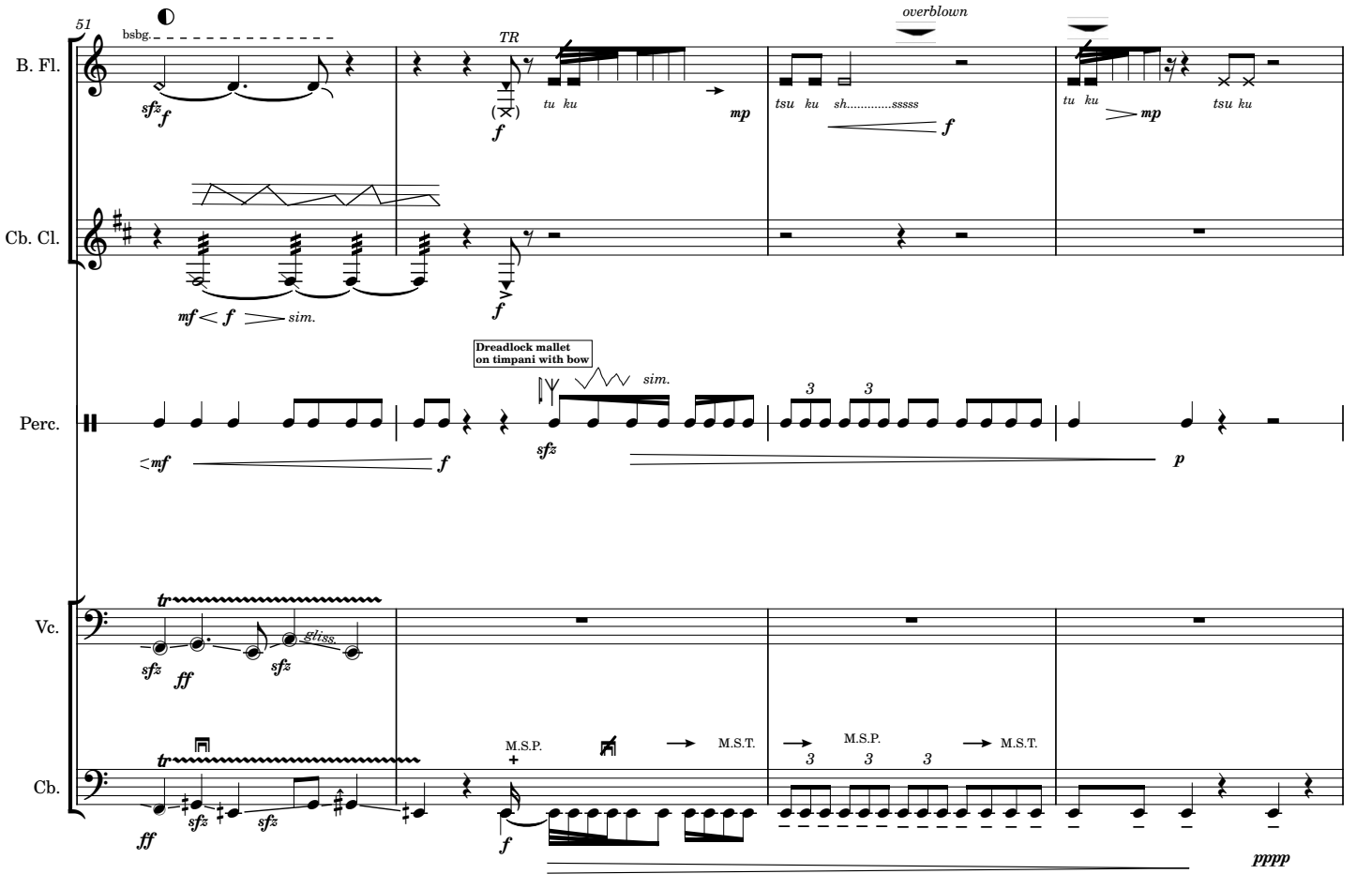

24
M1
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
*with low fried voice
with mouthpiece
embouchure vib.
*with open first holl
Kn. needle with a bow on timpani
M.S.P.
ord.
M
IV [5,7,9]
bow wood buz
S.P.
col legno

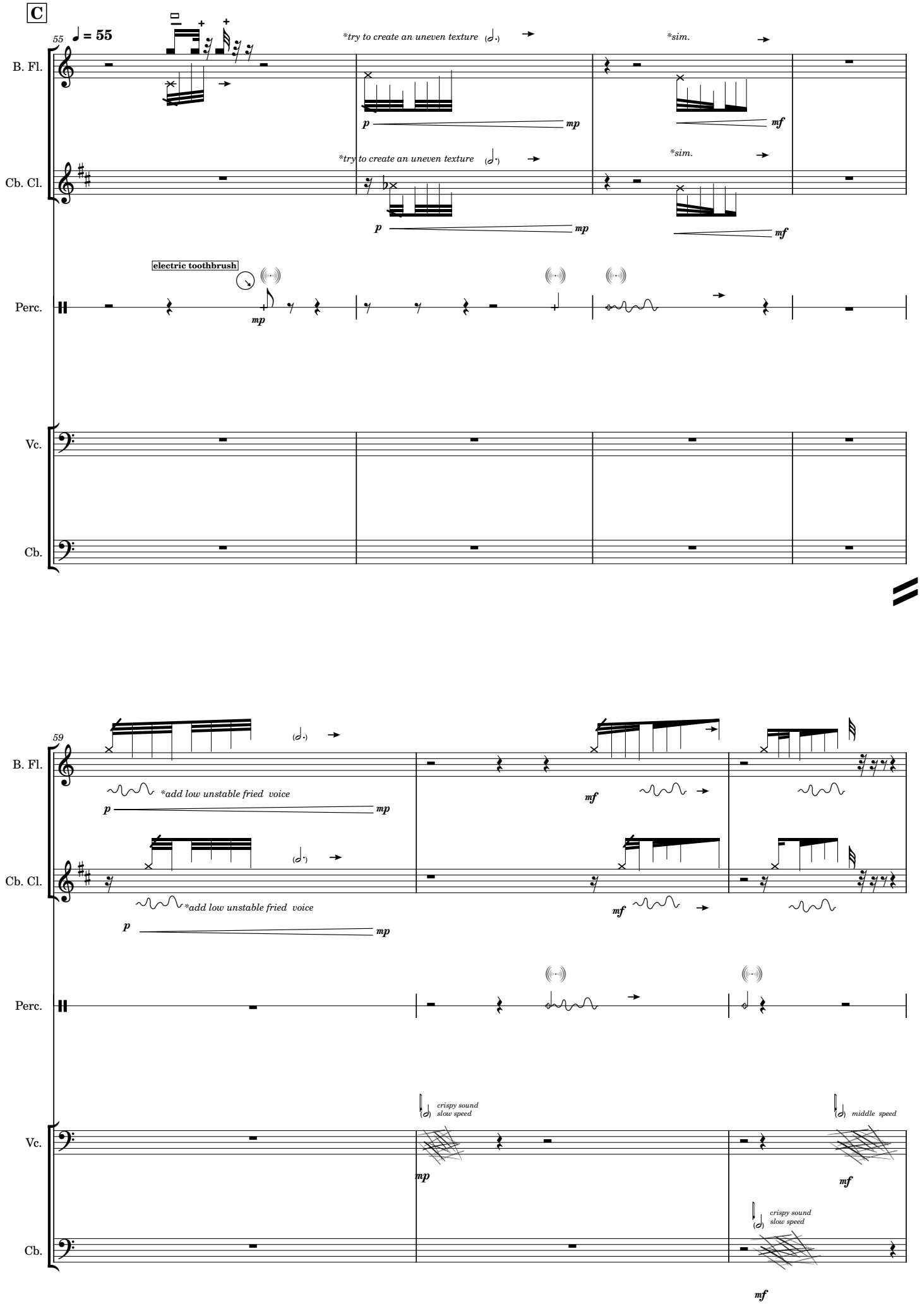

30
M10
M69
B
= 43
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
TR
overblow
cymbal on timp.
with bow
elephant sound
Black-headed Gull
col legno
III [13,14,15]
*unstable sound result
M.S.P.
ord.

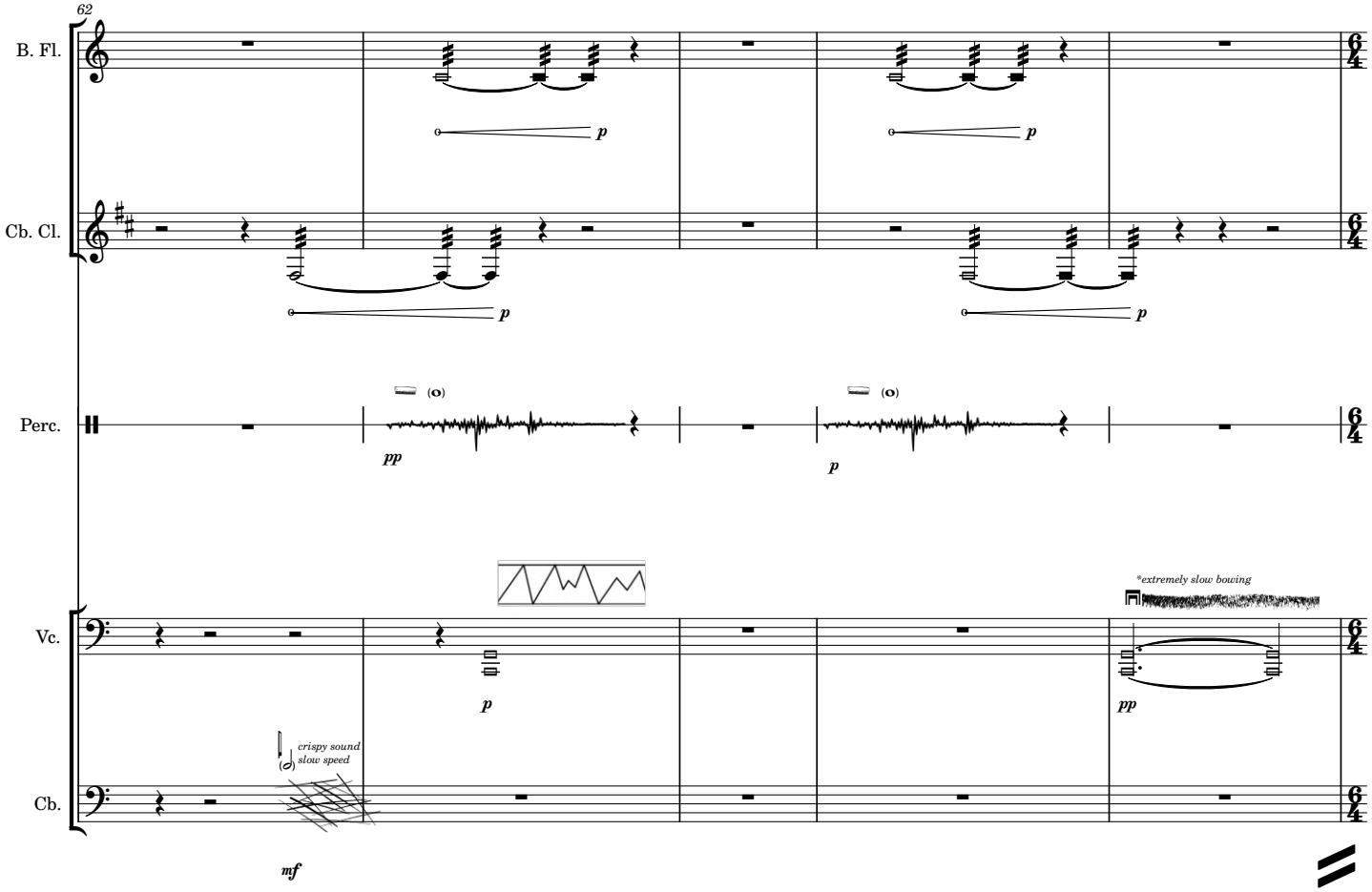

36
B. Fl.
Cb. Cl.
Black-headed Gull
Perc.
*with closed holls
*with open first holl
Vc.
Cb.
ord.
M.S.P.
ord.
M.S.P.

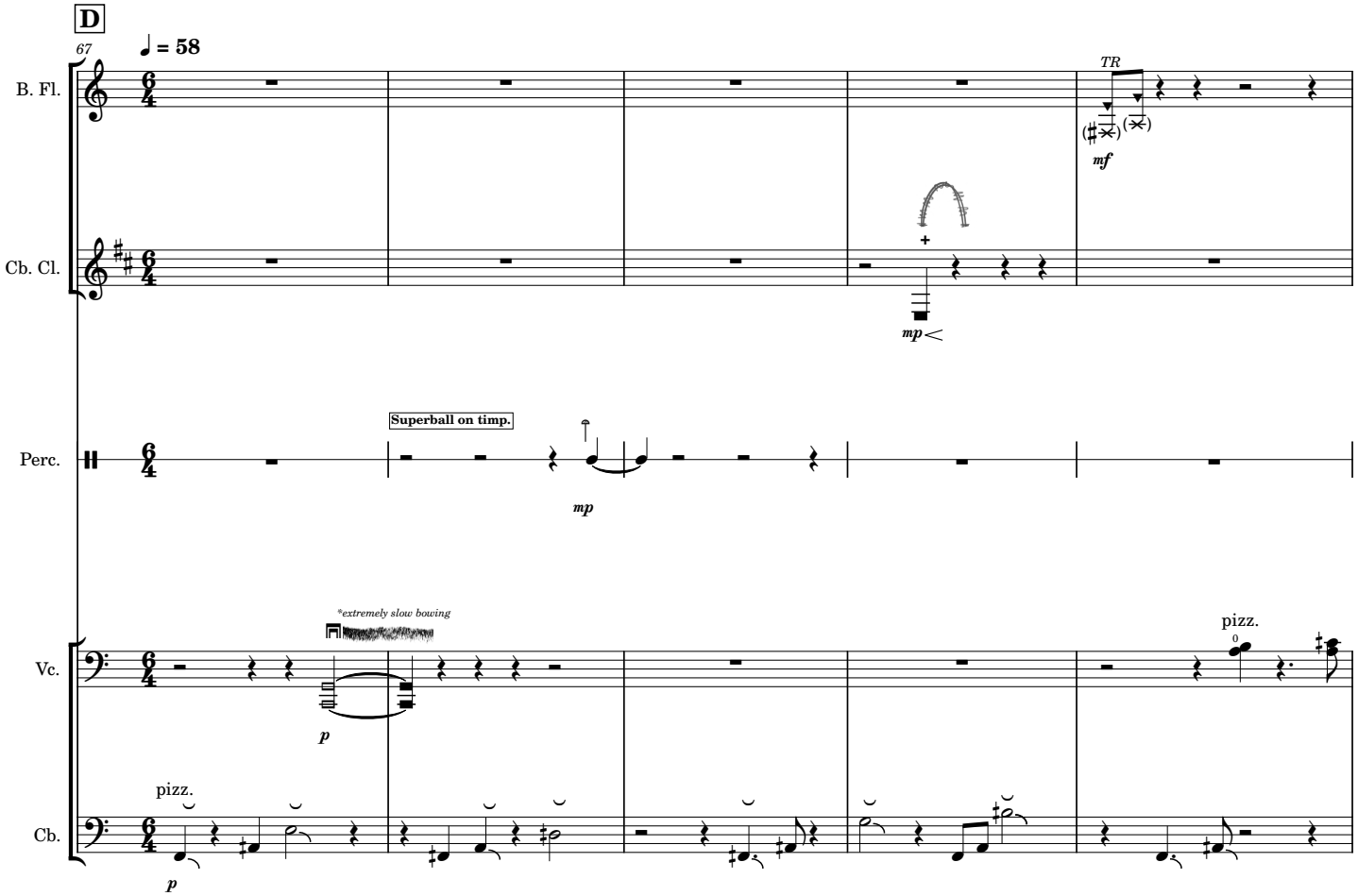

41
B. Fl.
TR
*lipgliss
Cb. Cl.
Superball on timp.
Black-headed Gull
Superball on timp.
Perc.
*with closed holls
3
Vc.
M.S.P.
gliss.
gliss.
Cb.
ord.
M.S.P.
ord.
M.S.P.
gliss.
gliss.
gliss.
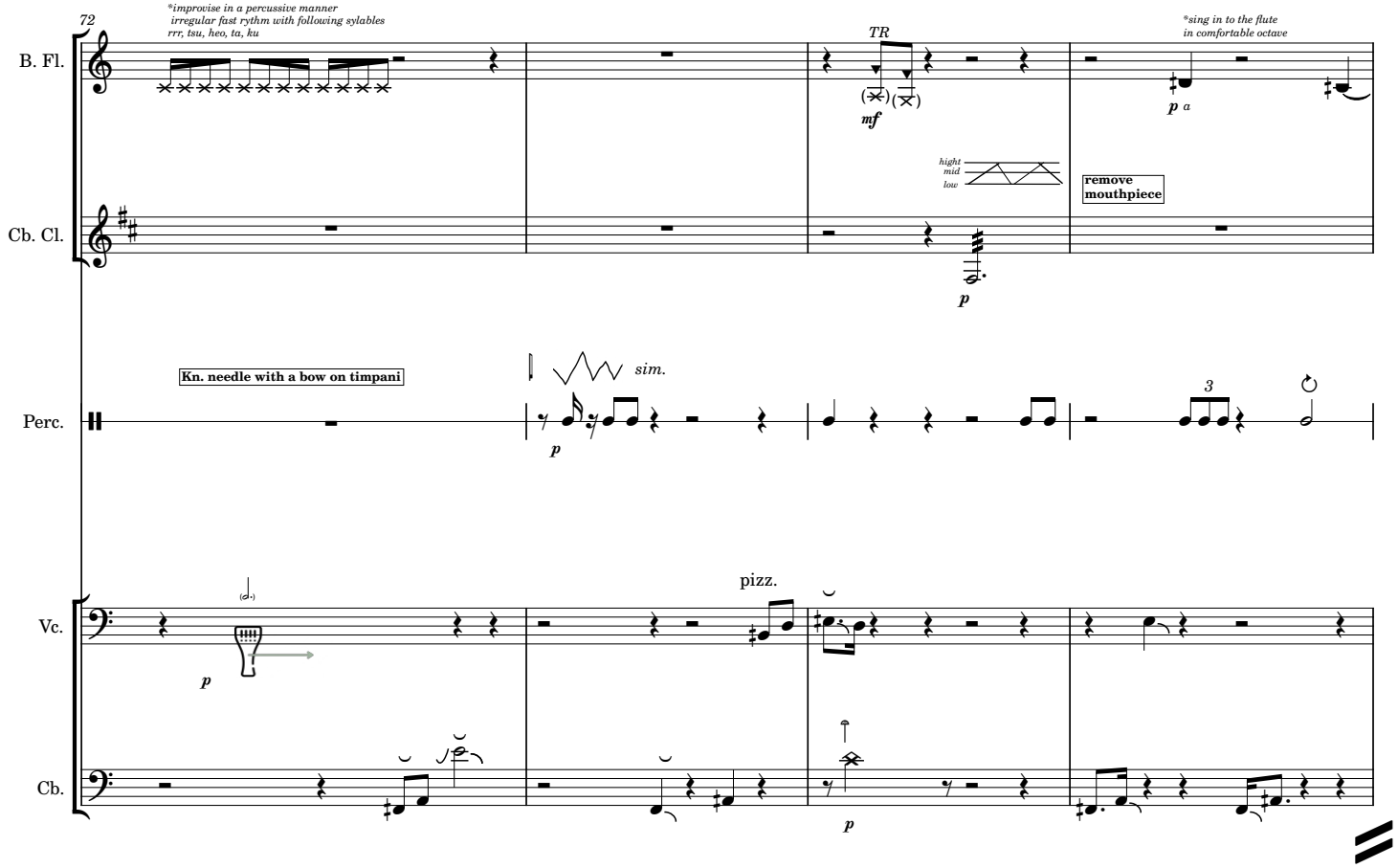

46
B. Fl.
bsbg.
Cb. Cl.
Perc.
Nightingale
sim.
Jaguar whistle
Superball on timp.
drum sticks on timpani
Vc.
pizz.
col legno
M.S.P.
gliss.
Cb.
sul tasto
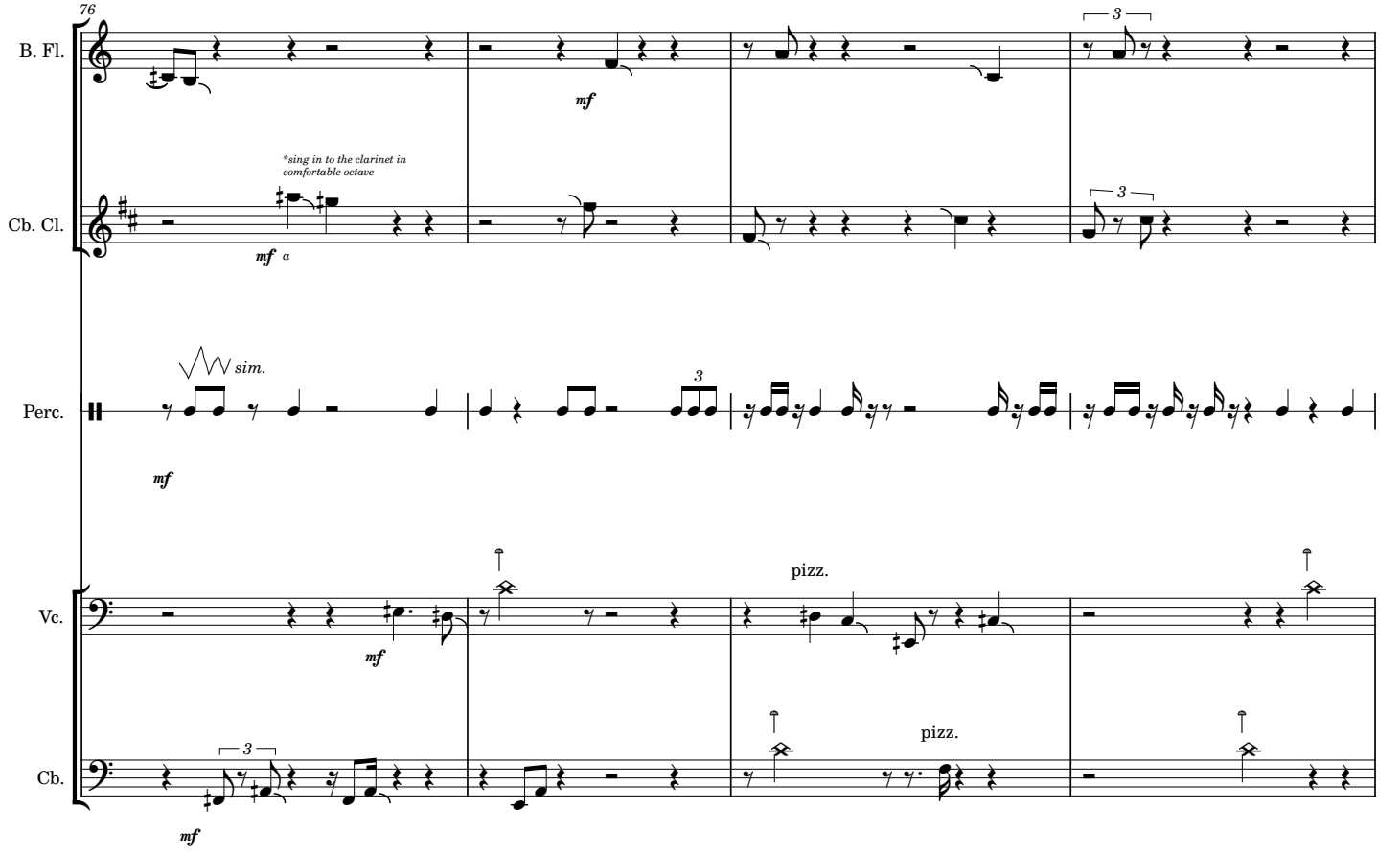

51
B. Fl.
bsbg.
TR
overblown
tu ku
tsu ku
sh.....sssss
Cb. Cl.
sim.
Dreadlock mallet
on timpani with bow
Perc.
Vc.
gliss.
Cb.
M.S.P.
M.S.T.

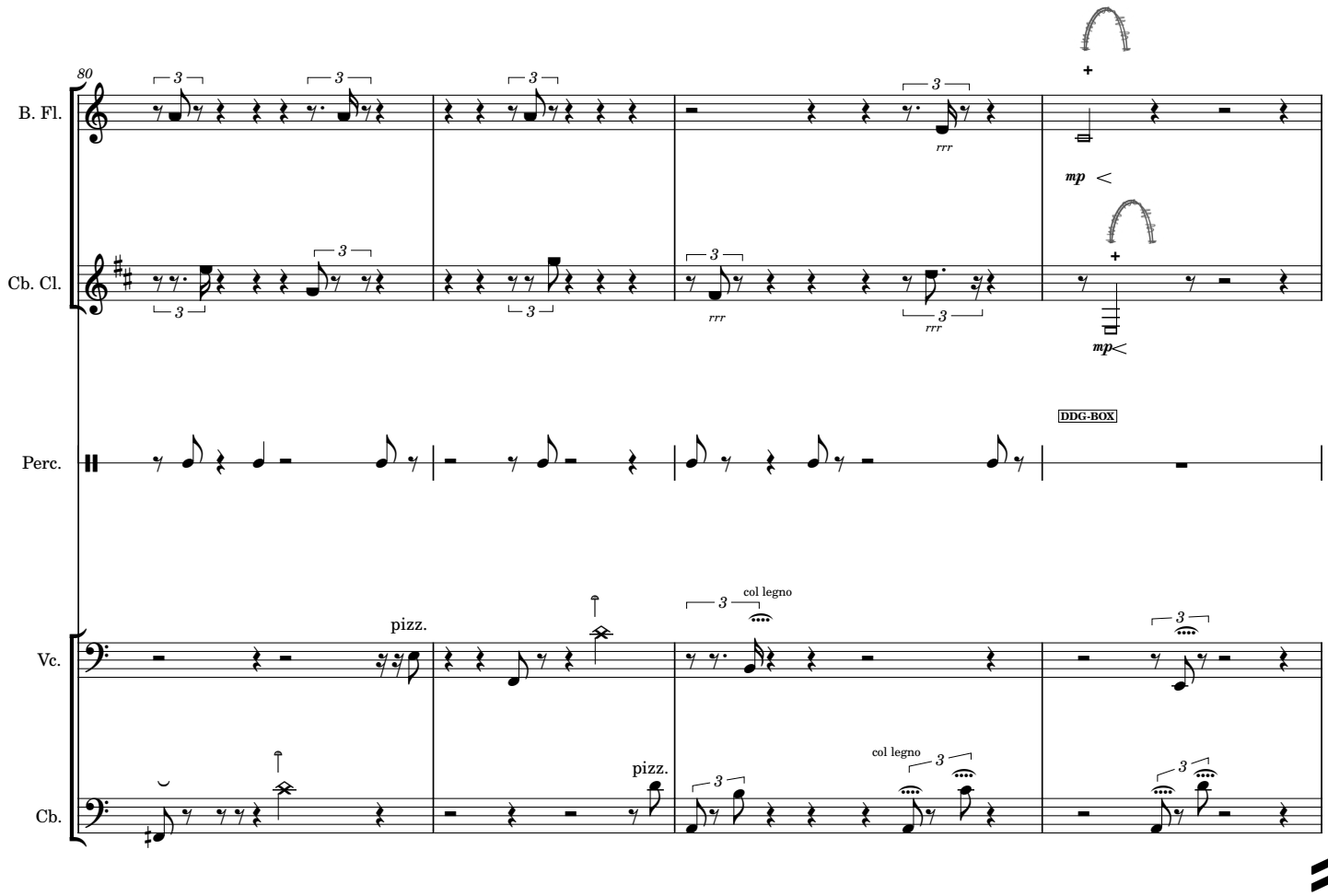

C
55
♩ = 55
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
*try to create an uneven texture
*sim.
p
mp
mf
electric toothbrush
59
*add low unstable fried voice
crispy sound
slow speed
middle speed
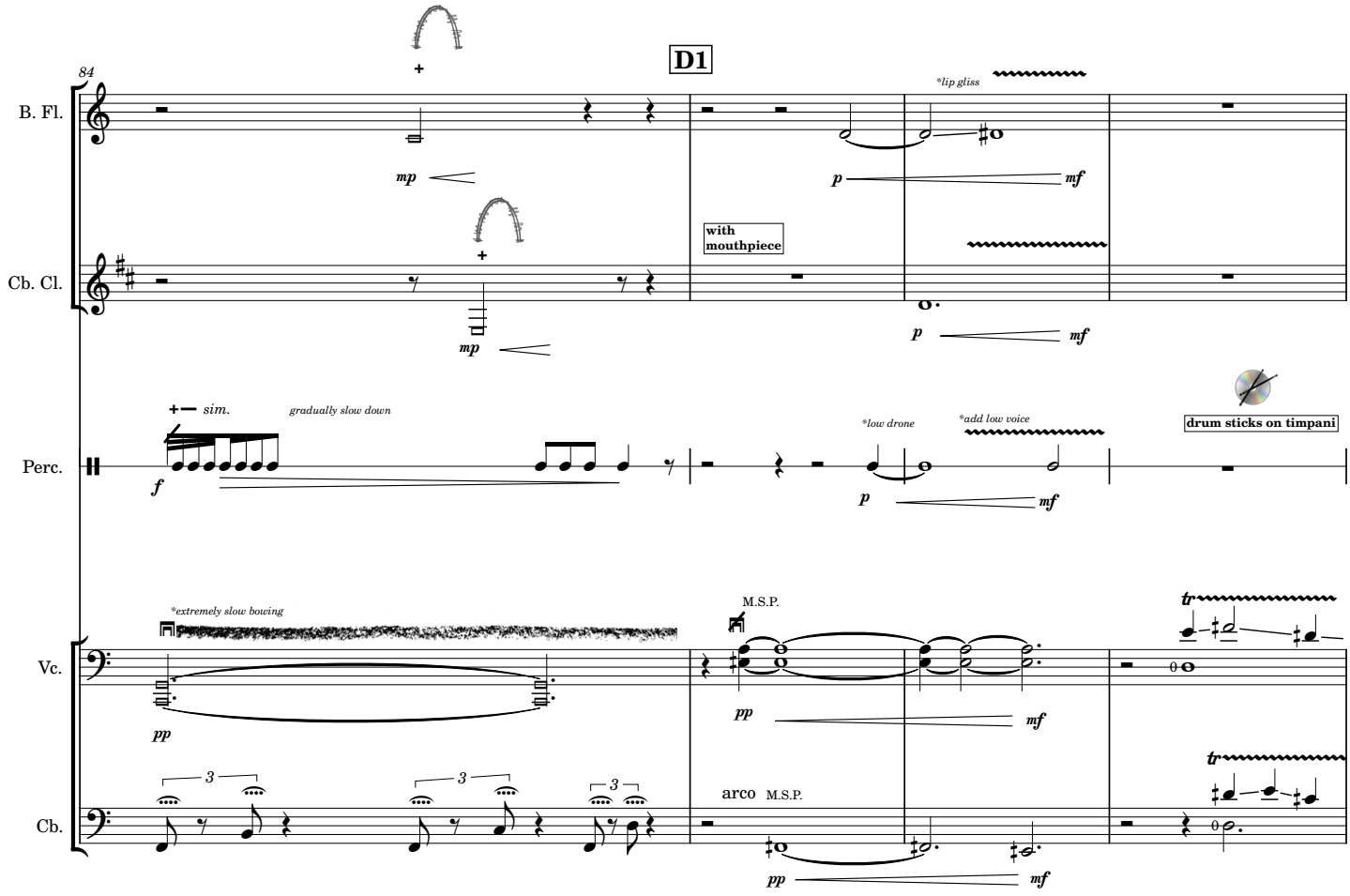

62
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
p
pp
(o)
*extremely slow bowing
crispy sound
slow speed
mf

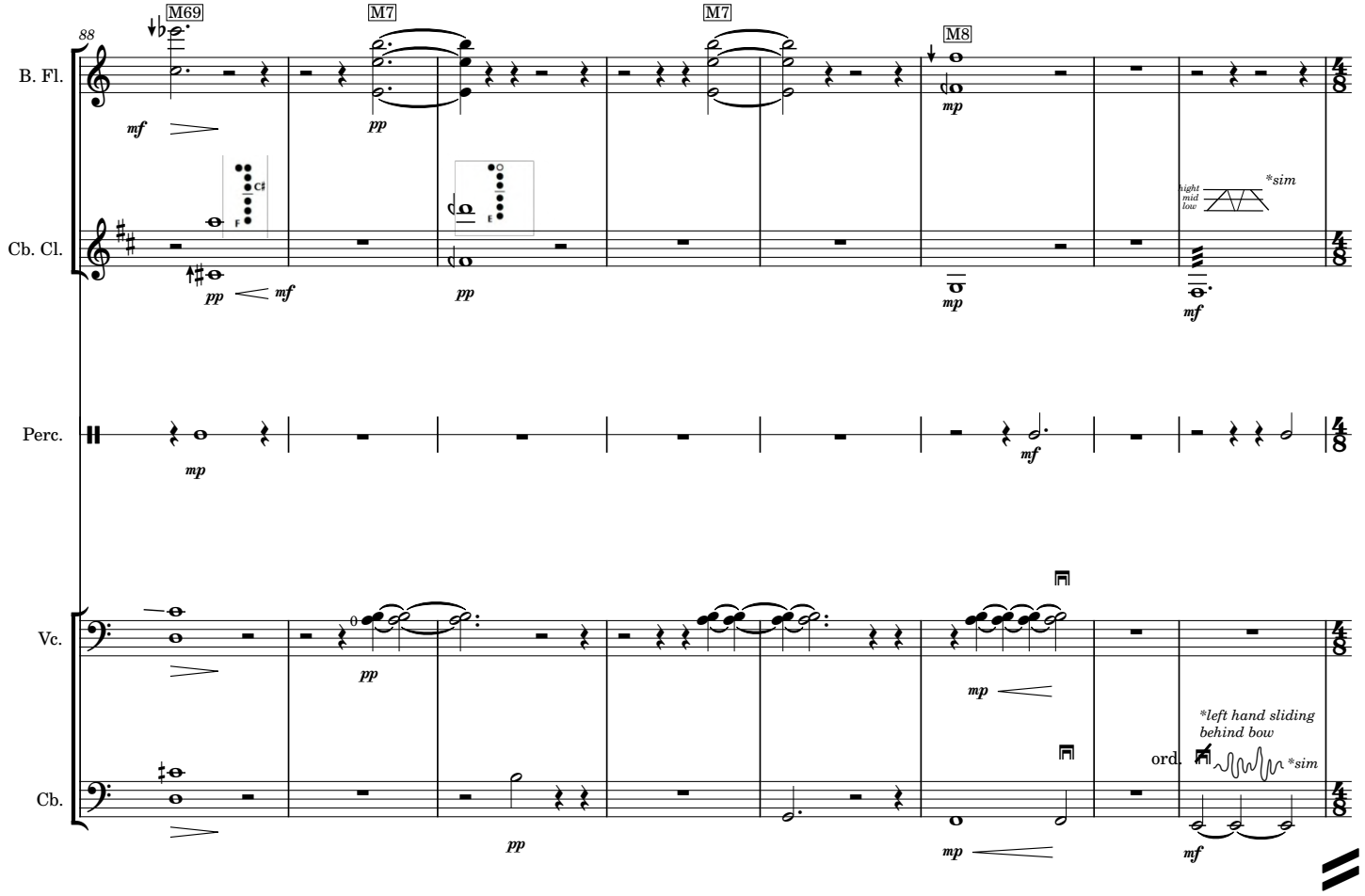

D
67
♩ = 58
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
TR
mf
mp
Superball on timp.
*extremely slow bowing
p
pizz.

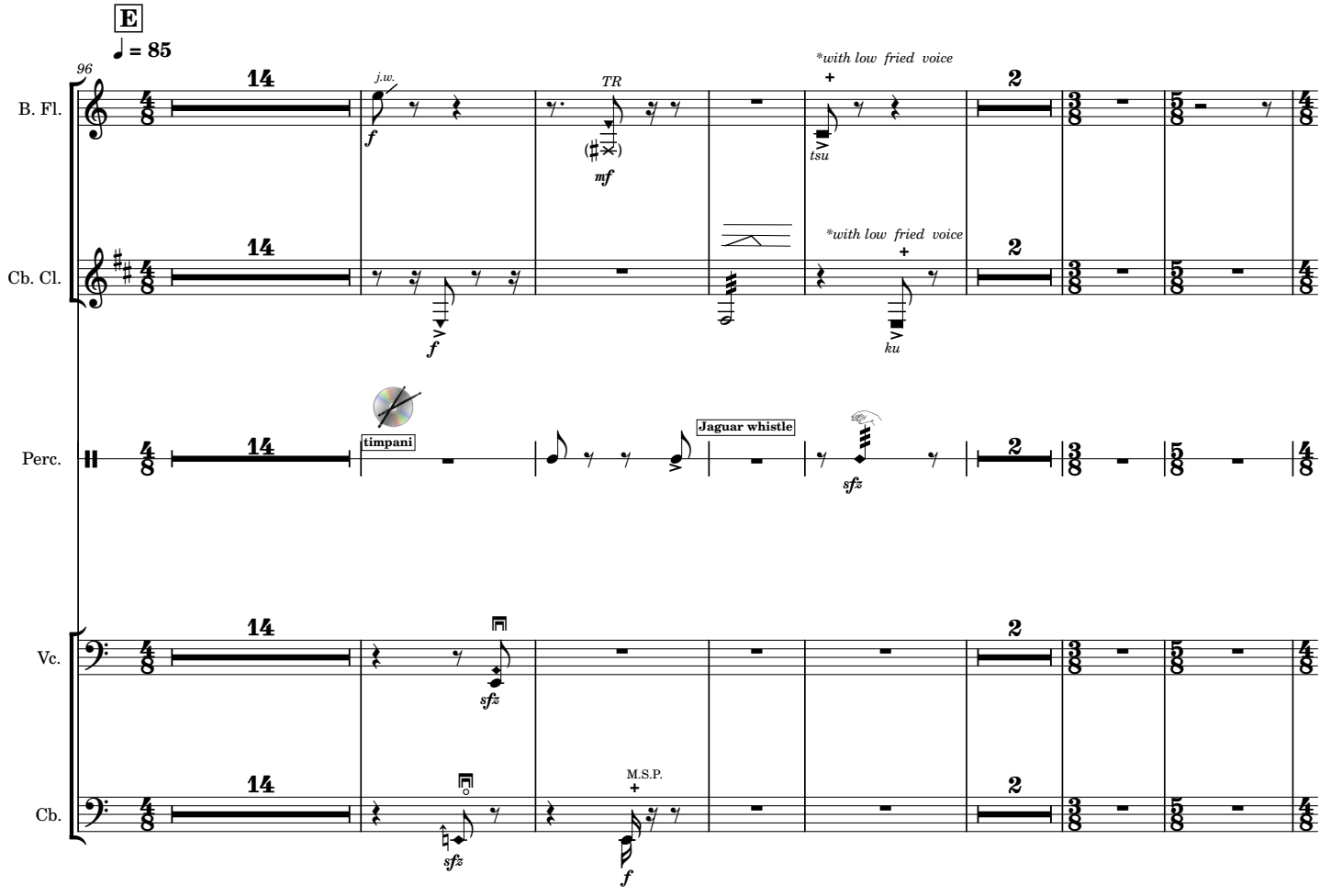

72
*improvise in a percussive manner
irregular fast rythm with following sylables
rrr, tsu, heo, ta, ku
TR
*sing in to the flute
in comfortable octave
B. Fl.
mf
p a
hight
mid
low
remove
mouthpiece
Cb. Cl.
p
Kn. needle with a bow on timpani
sim.
Perc.
p
3
pizz.
Vc.
p
Cb.
p

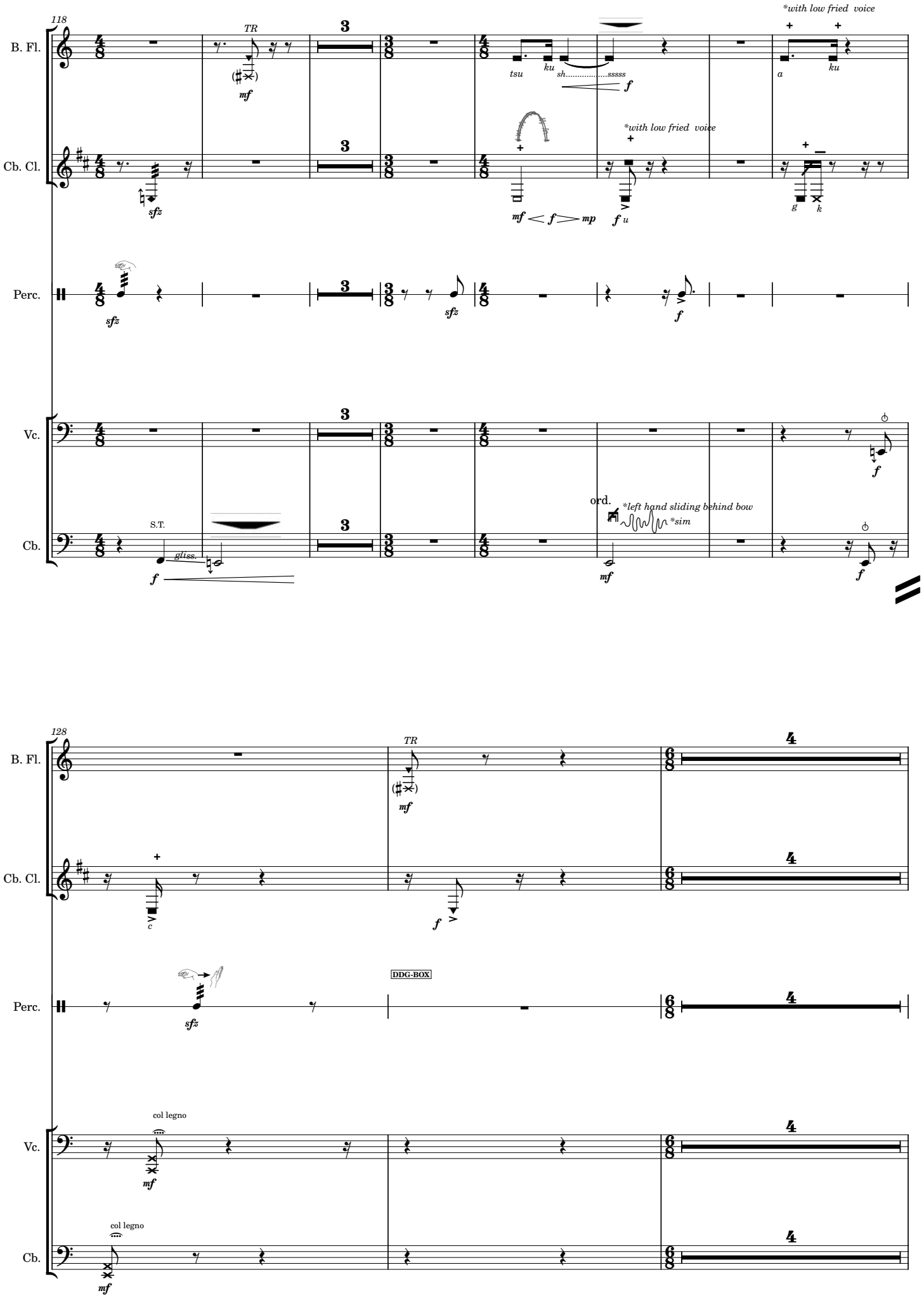

76
B. Fl.
mf
3
*sing in to the clarinet in
comfortable octave
Cb. Cl.
mf a
3
sim.
Perc.
3
mf
pizz.
Vc.
mf
pizz.
3
Cb.
mf

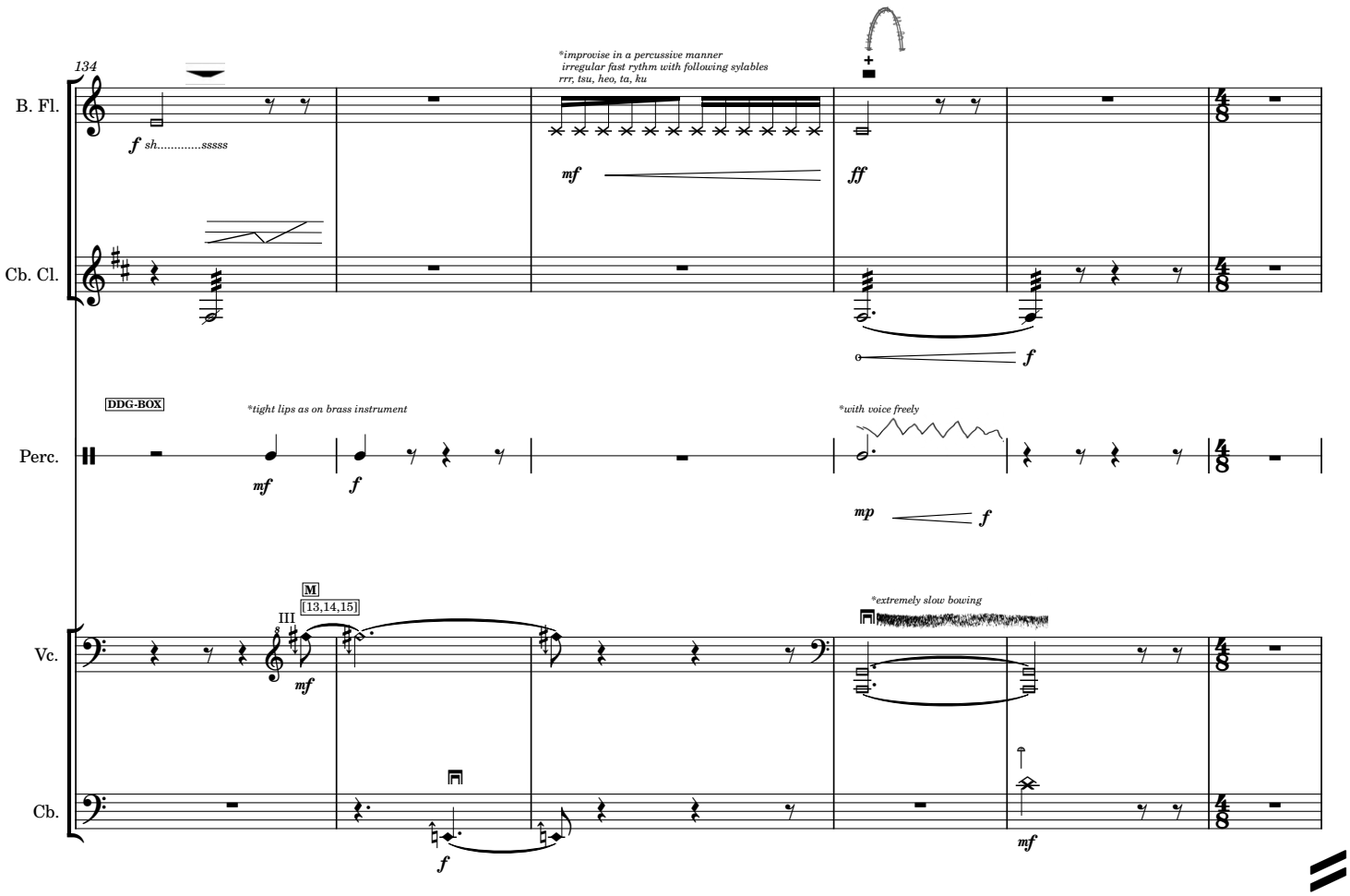

80
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
mp
rrr
DDG-BOX
pizz.
col legno
pizz.
col legno

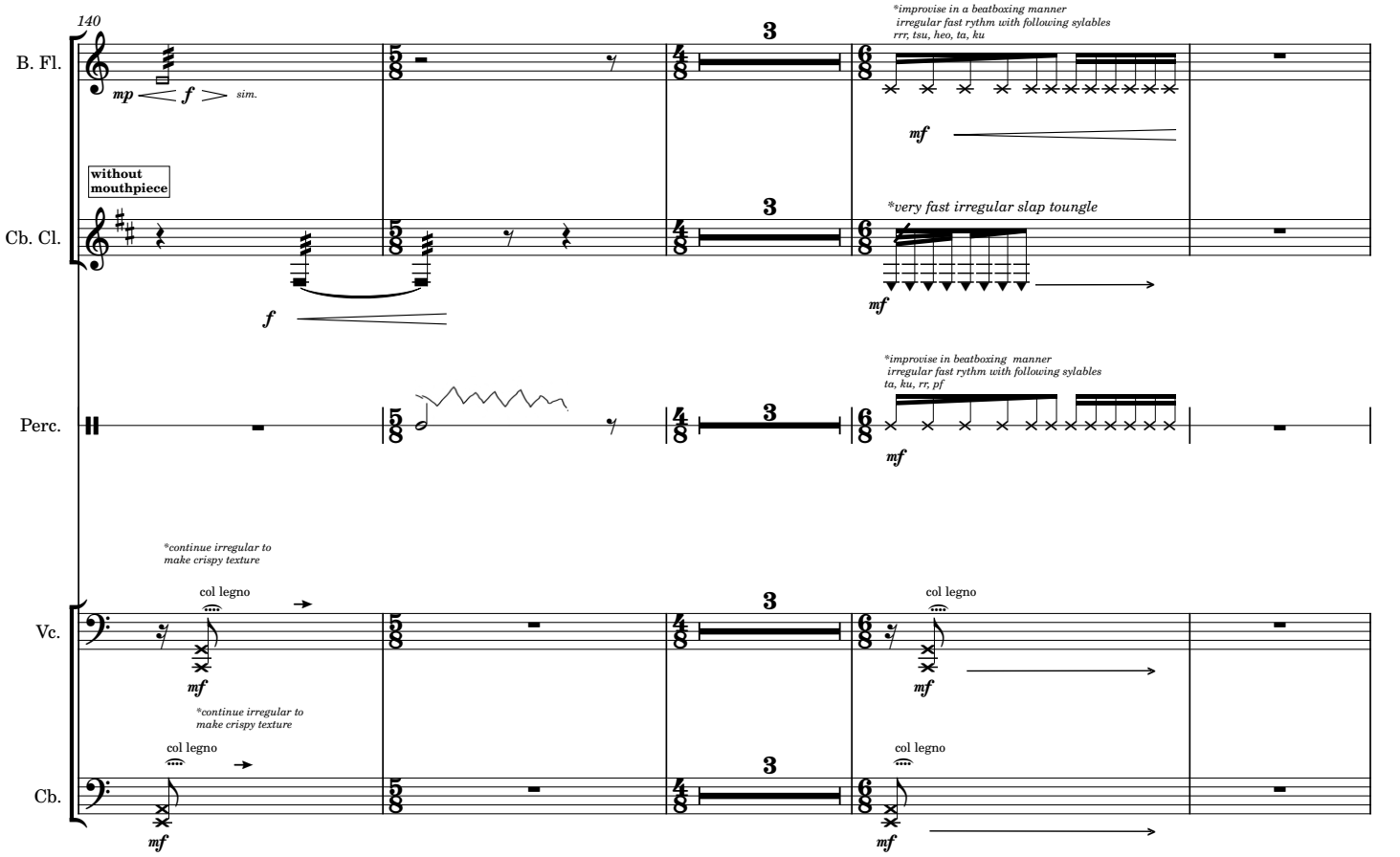

84
D1
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
mp
*lip gliss
p
mf
with mouthpiece
+ sim.
gradually slow down
f
*low drone
*add low voice
drum sticks on timpani
*extremely slow bowing
pp
M.S.P.
arco
tr

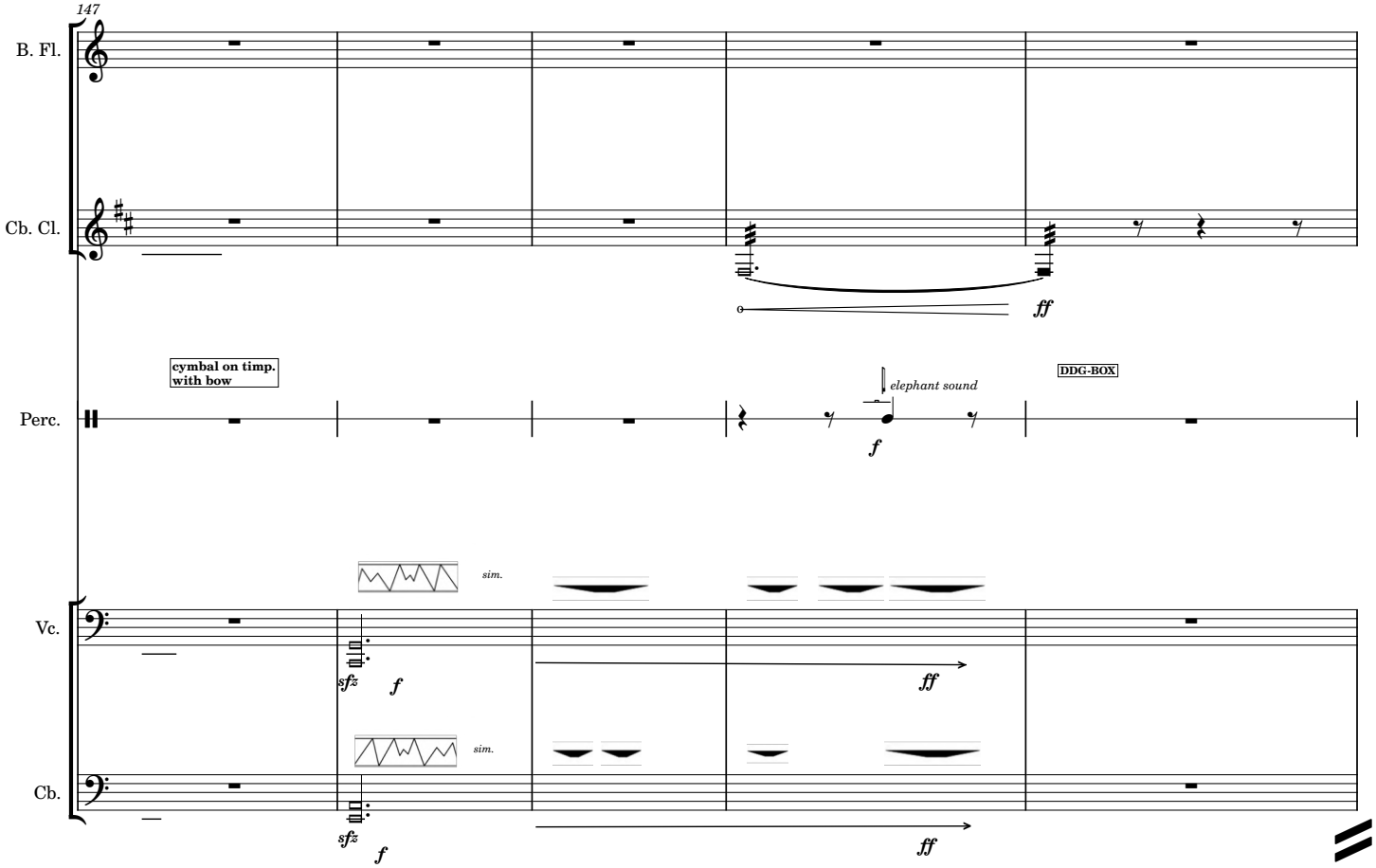

M69
M7
M7
M8
88
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
mf
pp
mp
*sim
*left hand sliding behind bow
ord.

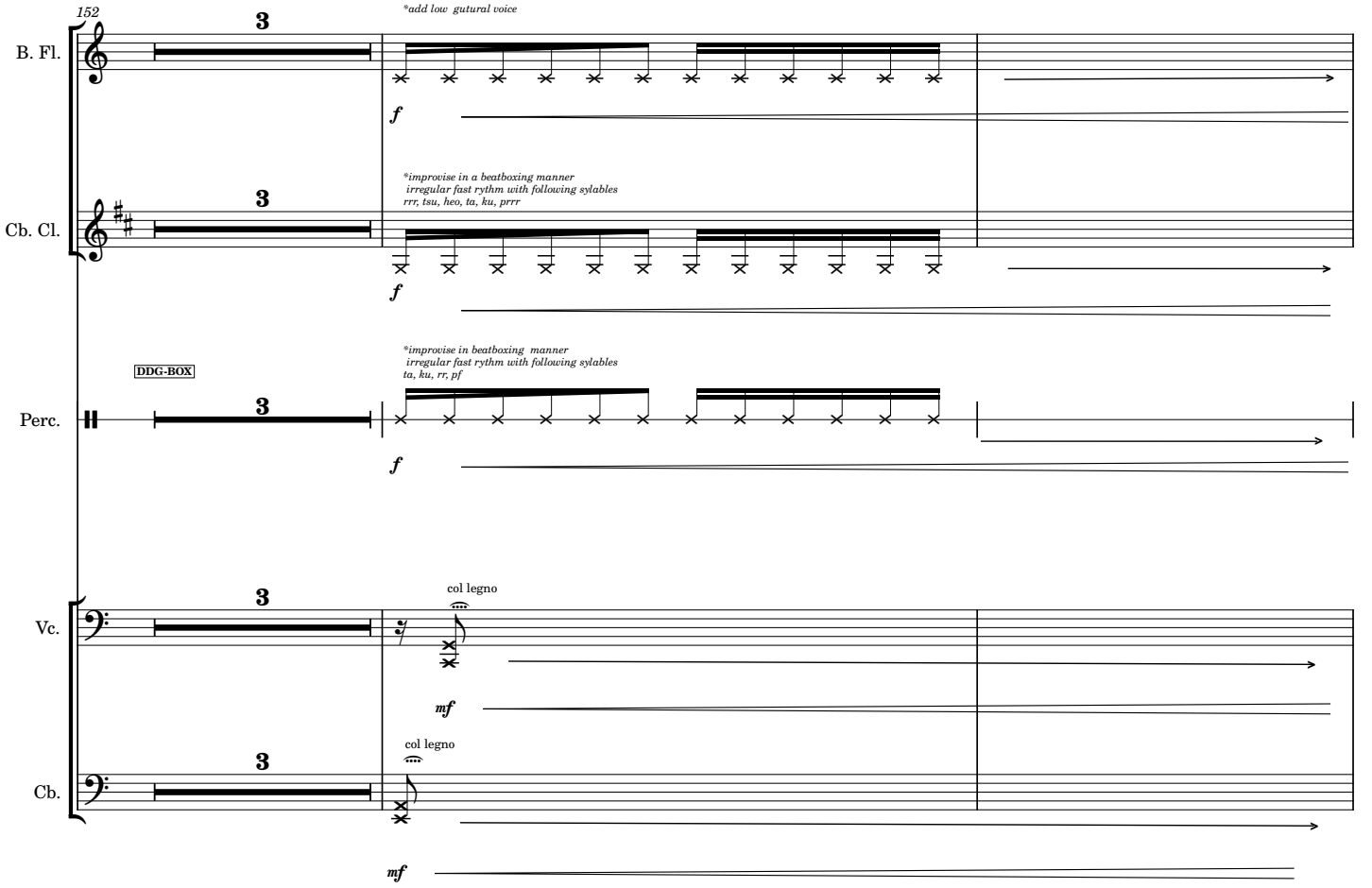

E
♩ = 85
96
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
14
2
j.w.
TR
*with low fried voice
tsu
ku
timpani
Jaguar whistle
sfz
f
mf
M.S.P.

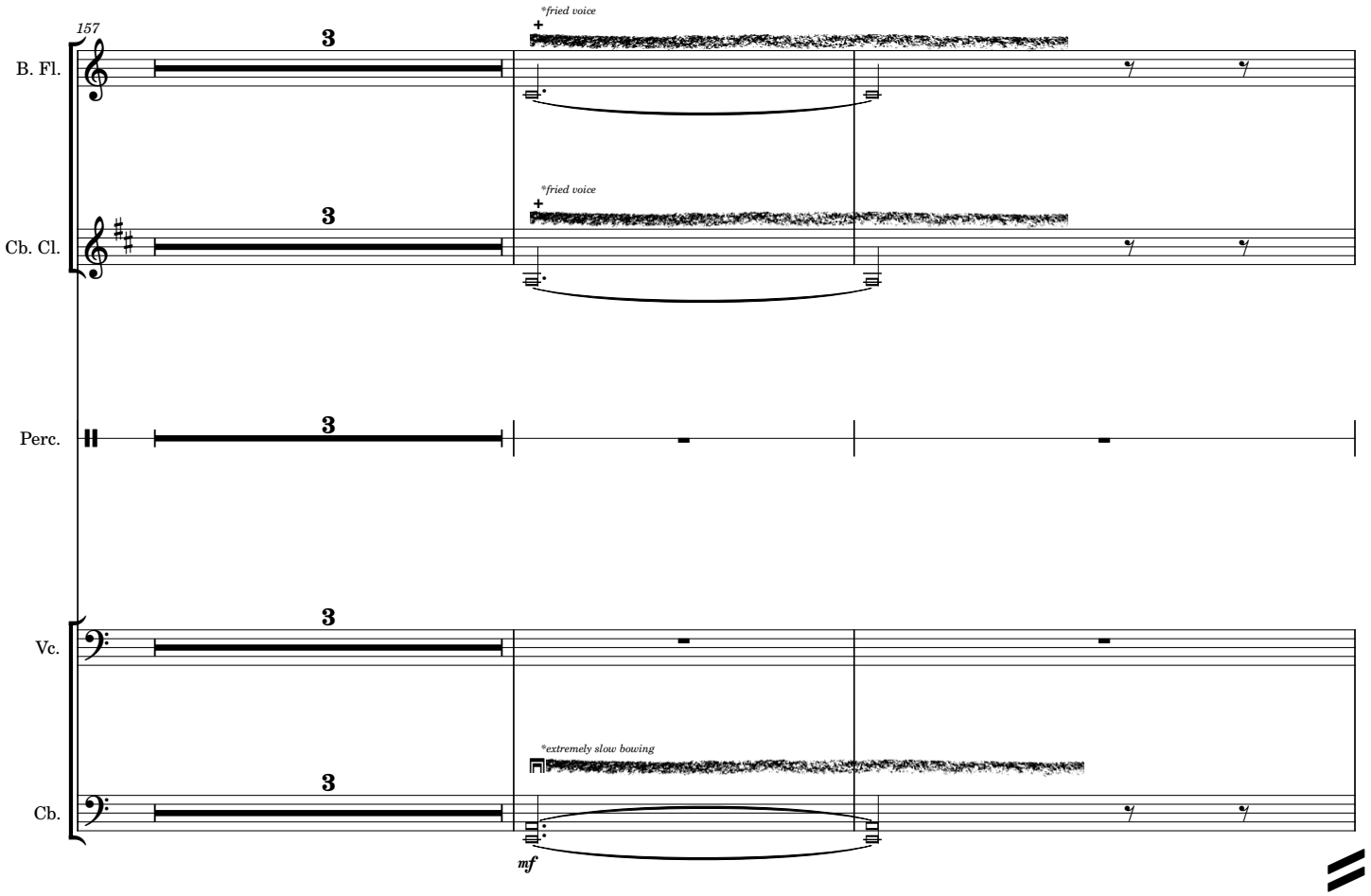

118
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
TR
mf
sfz
tsu
ku
sh.....sssss
f
*with low fried voice
a
ku
mf < f > mp
f u
g
k
f
S.T.
gliss.
ord.
*left hand sliding behind bow
*sim
128
c
DDG-BOX
col legno

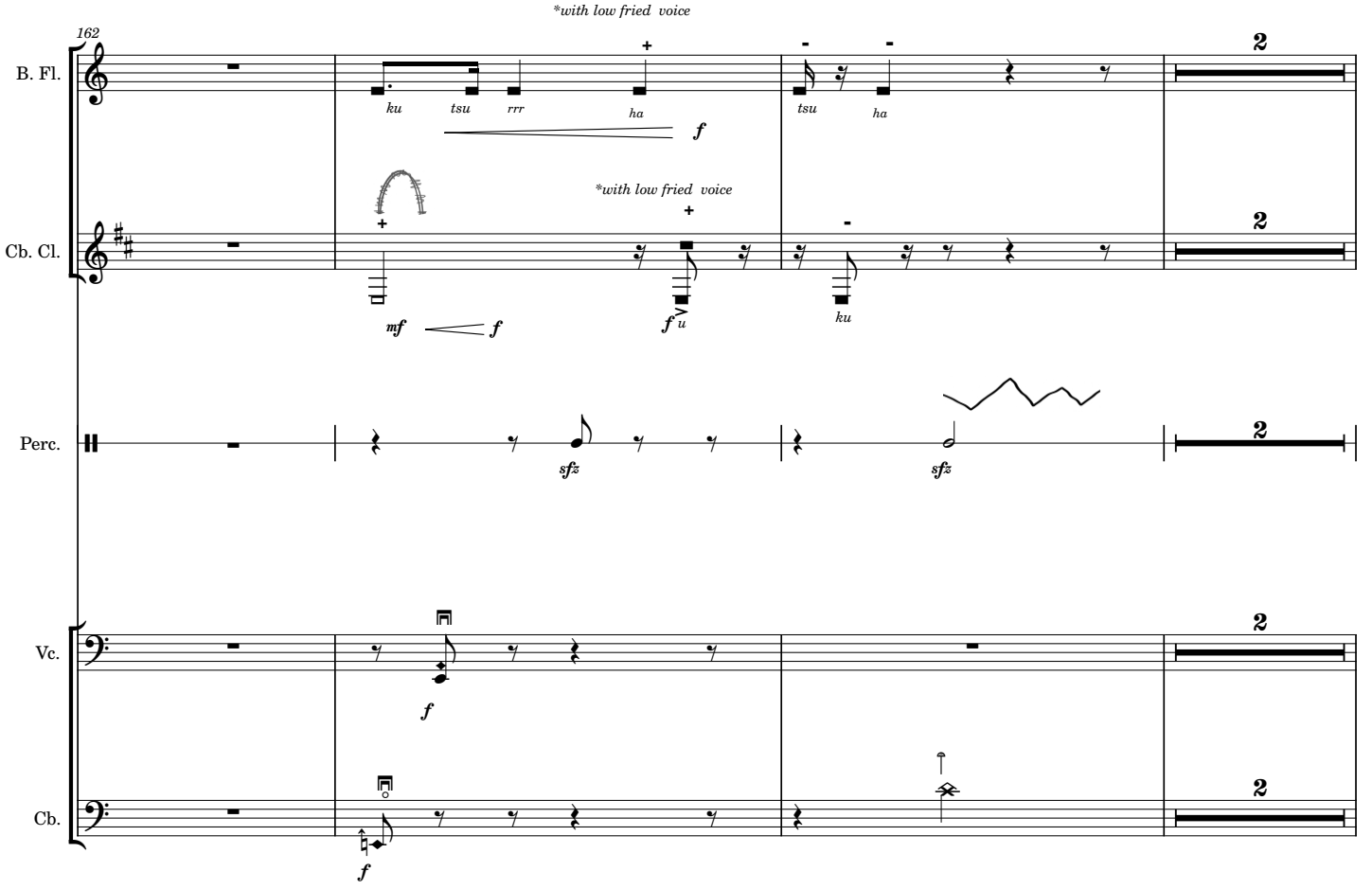

134
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
f sh.....sssss
*improvise in a percussive manner
irregular fast rythm with following sylables
rrr, tsu, heo, ta, ku
mf
ff
f
DDG-BOX
*tight lips as on brass instrument
mf
f
*with voice freely
mp
f
M
[13,14,15]
III
mf
*extremely slow bowing
f
mf

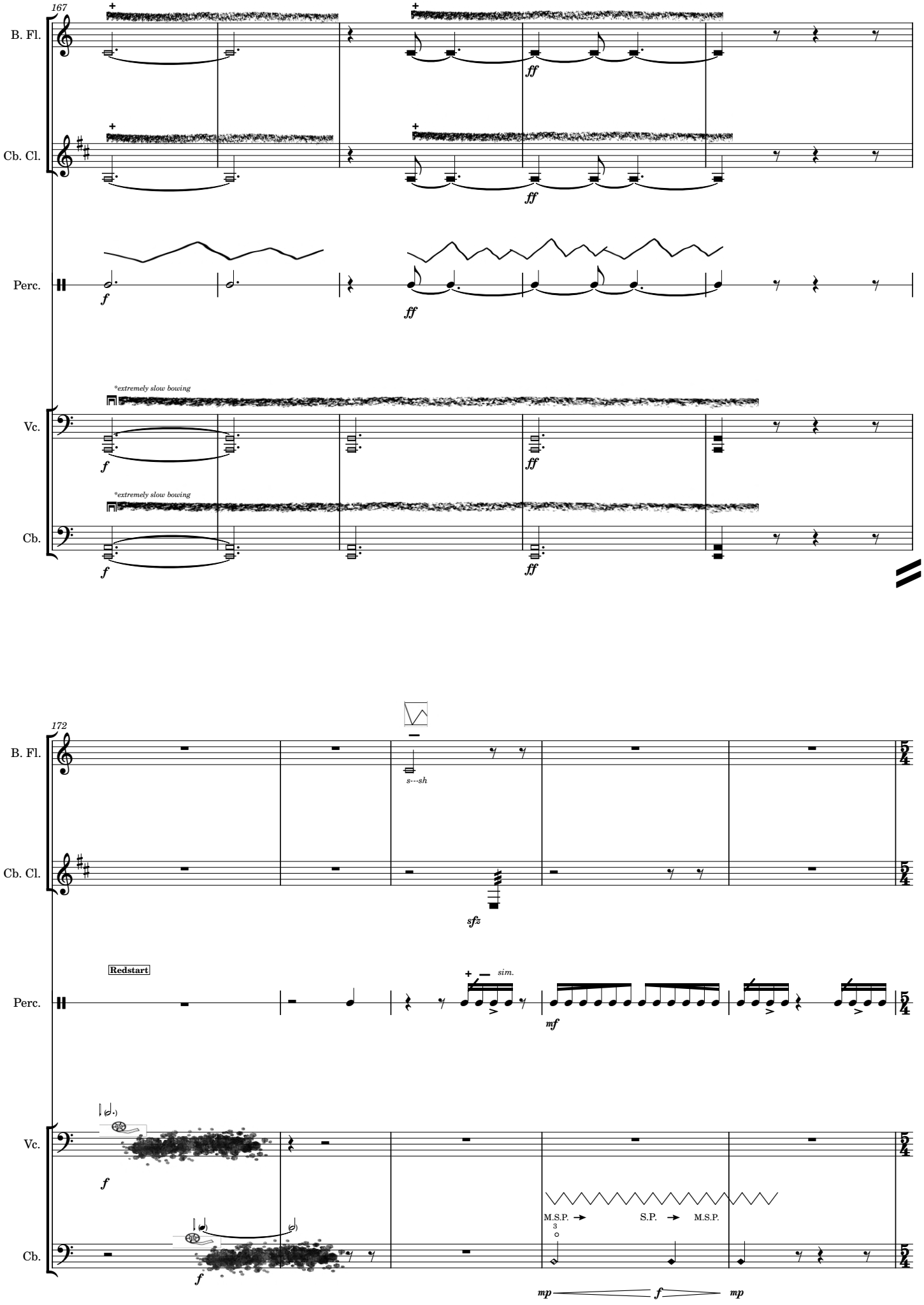

140
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
mp
f
sim.
*improvise in a beatboxing manner
irregular fast rythm with following sylables
rrr, tsu, heo, ta, ku
mf
without
mouthpiece
f
*very fast irregular slap toungle
mf
*improvise in beatboxing manner
irregular fast rythm with following sylables
ta, ku, rr, pf
mf
*continue irregular to
make crispy texture
col legno
mf
col legno
mf
*continue irregular to
make crispy texture
col legno
mf
col legno
mf
3
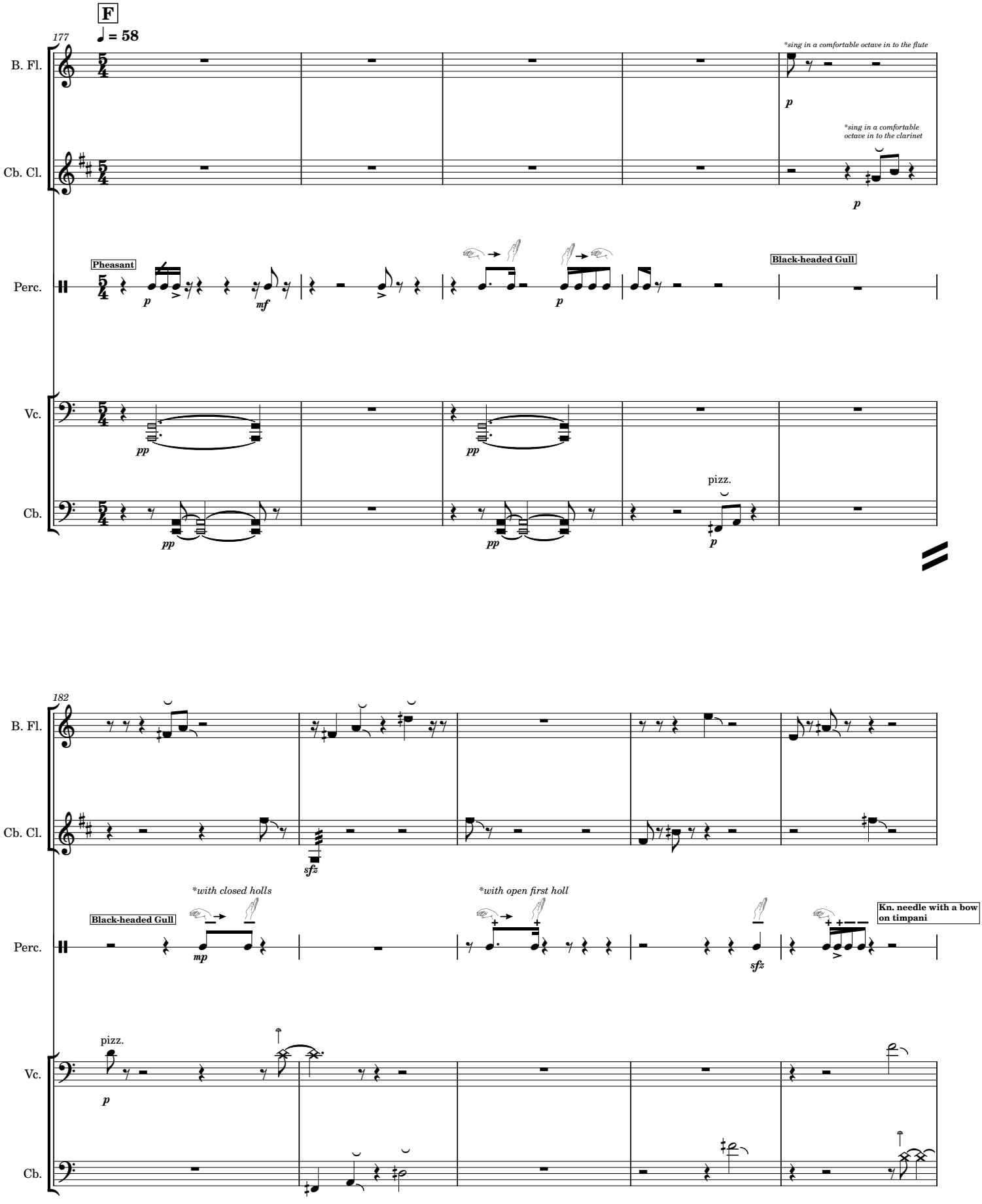

147
B. Fl.
Cb. Cl.
ff
cymbal on timp.
with bow
Perc.
elephant sound
f
DDG-BOX
sim.
Vc.
sfz
f
ff
sim.
Cb.
sfz
f
ff
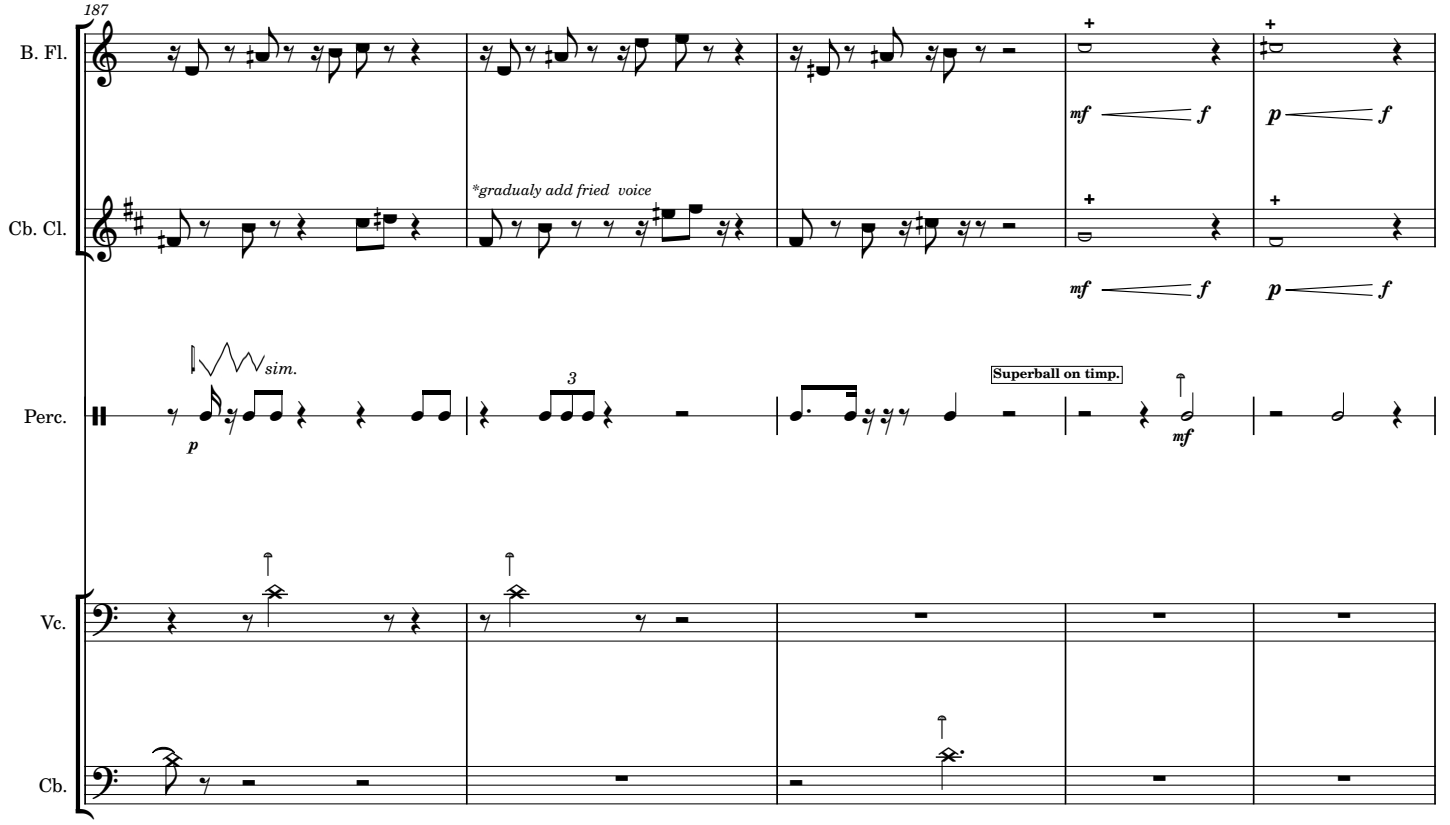

152
B. Fl.
3
*add low gutural voice
f
Cb. Cl.
3
*improvise in a beatboxing manner
irregular fast rythm with following sylables
rrr, tsu, heo, ta, ku, prrr
f
DDG-BOX
Perc.
3
*improvise in beatboxing manner
irregular fast rythm with following sylables
ta, ku, rr, pf
f
Vc.
3
col legno
mf
Cb.
3
col legno
mf

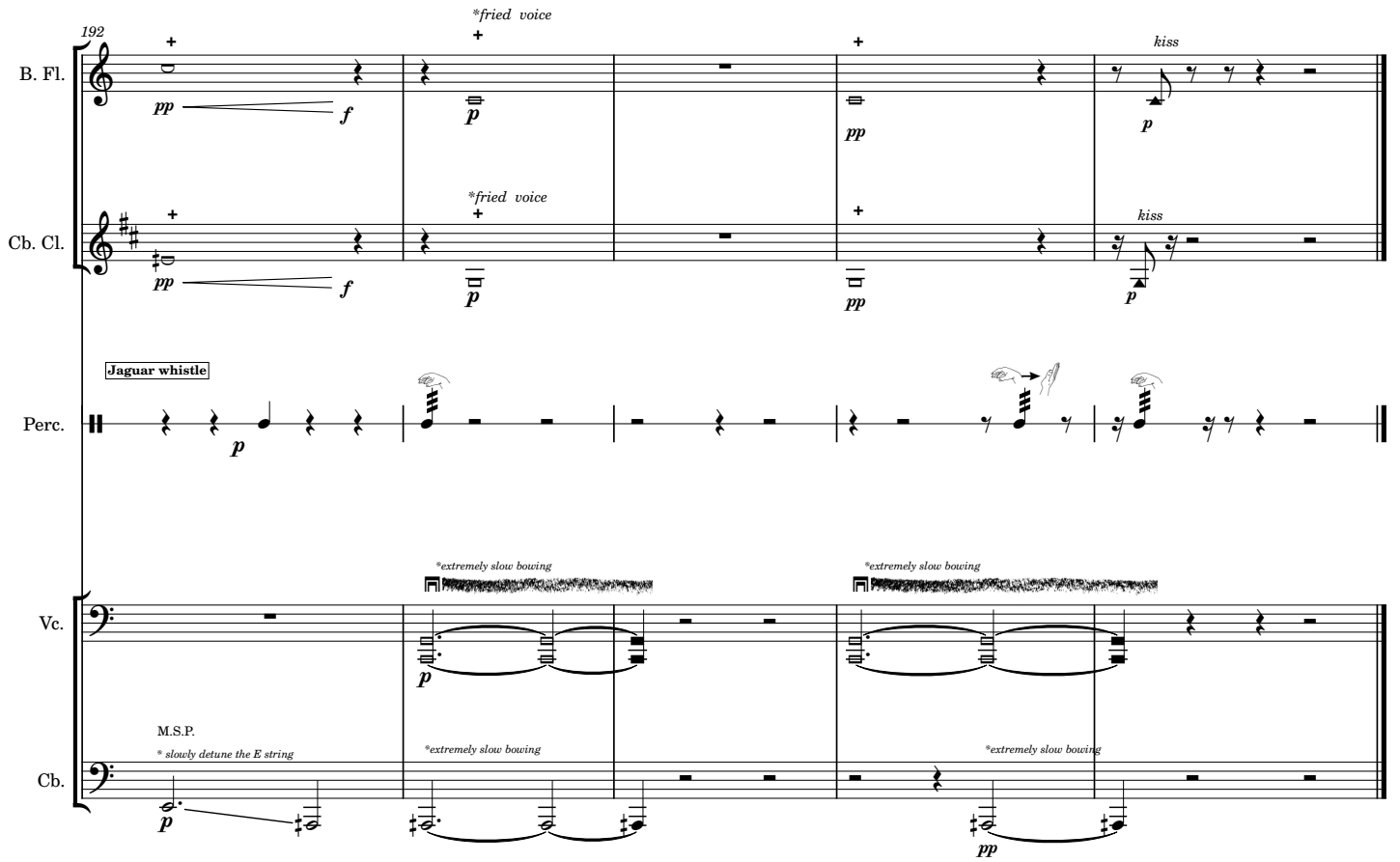

157
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
3
*fried voice
*extremely slow bowing
mf


162
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
*with low fried voice
ku
tsu
rrr
ha
tsu
ha
f
mf
f
sfz
2


167
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
*extremely slow bowing
*extremely slow bowing
f
ff
172
s---sh
sfz
Redstart
sim.
mf
M.S.P.
S.P.
M.S.P.
3
mp
f
mp


F
♩ = 58
177
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
*sing in a comfortable octave in to the flute
*sing in a comfortable octave in to the clarinet
Pheasant
Black-headed Gull
pizz.
182
*with closed holls
*with open first holl
Kn. needle with a bow on timpani


187
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
*gradualy add fried voice
sim.
3
Superball on timp.


192
B. Fl.
Cb. Cl.
Perc.
Vc.
Cb.
*fried voice
*fried voice
kiss
kiss
Jaguar whistle
*extremely slow bowing
*extremely slow bowing
M.S.P.
* slowly detune the E string
*extremely slow bowing
*extremely slow bowing

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Ehrenwörtliche Erklärung

Hiermit bestätige ich, dass mir der *Leitfaden für schriftliche Arbeiten an der KUG* bekannt ist und ich die darin enthaltenen Bestimmungen eingehalten habe. Ich erkläre ehrenwörtlich, dass ich die vorliegende Arbeit selbständig verfasst, andere als die angegebenen Quellen nicht verwendet und die wörtlich oder inhaltlich entnommenen Stellen als solche kenntlich gemacht habe. Sofern fremde Hilfe (z.B. Korrekturlesen durch Native Speaker) und/oder KI-Dienste verwendet wurden (z.B. internetbasierte Übersetzungstools und/oder KI-basierte Sprachmodelle) habe ich dies ausgewiesen.

Graz, 16.01.2026

