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Performing musical silence: markers, gestures, and embodiments

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Chapter 1. Introduction, Concepts, and Terminology

The word *silence* encompasses a multitude of meanings and is used in a wide variety of ways across disciplines, media, and cultures. Silence can be subject, verb, and object. It can be societal, religious, mindful, meditative, diplomatic, political, aggressive, or punitive. As a classical conservatory student in the 1990s, I performed through or past the rests in the score, bestowing little attention on them. During a rest, I focused solely on counting for myself or retaining the attention of the audience. It had not yet occurred to me that silence could be malleable in the same way that sound is; or rather in its own way, in another way. Discovering the silences of George Antheil's *Ballet mécanique*, which I experienced as some of the noisiest, most brutal rests in the history of classical music, was a revelation. After performing Antheil's breathless, nervous, precision silences, I went back to the piano with new ears and a fresh attitude, trying to understand performed silences and ask new questions.

What are the contexts that potentially affect musical silences? What are these rests that musicians easily take for granted? What are the silences in which performers or audiences willingly or unwillingly participate? In this research project, I will experiment with the performance of silences. I will act against vague assumptions about silence, consider the ways it is notated, and propose new interpretations for "playing" silence in music.

In western composed music, musical silences are usually written as shorthand signs called rests. These notations do not relate to the spatial context or acoustics of the performance venue, nor do they take the physicality or instrument of the performer into account. They may not even signify silence. While musical notes are often qualified and quantified in the score (via extra markings that indicate instrument, dynamic, nuance, duration, pitch, or accents), silence is notated in only one dimension: duration. This lack of notational scope seems to deny the wide range of affects that silence can convey, the many functions it can embody, and the information it can transmit.[1]

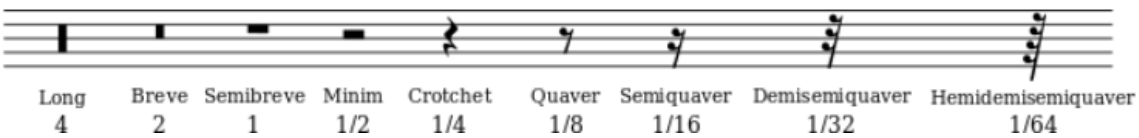

Figure 1: common rests conveying a single dimension (duration) in Western classical music (https://en.wikipedia.org/wiki/Rest_(music)#/media/File:Music_rests.svg)

[1] Luigi Nono's *Fragmente - Stille, An Diotima* quartet is a notable exception: his silences are labeled poetically, for example "with fancy free" (Cobussen, 2005).

Not only the notation of silence is one-dimensional. The literature on silence often seems insufficient. "Criticism and structural analysis usually focus on sounding musical events, leaving silence to be considered incidental, a mere accessory to the work proper" (Littlefield, 1996, p. 219). Classical music theory and history texts largely omit discussions of silence in music. Silence is rarely taught in conservatories. Textbooks and curricula also remain silent on silence. *The New Grove Dictionary of Music and Musicians* did not contain an entry on silence for 130 years, as musicologist Jenny Doctor (one of the editors of the 2001 edition) remarks:

> There was a comprehensive lack of recognition of this term, this concept, this entity as a music-relevant subject, the lack of recognition itself symbolic of the role silence plays generally in music-related discourse. (Doctor, 2017, p. 15)

Indeed, silence in conversation, silence in society, silence in architecture, silence in psychology, and silence in diplomacy are all better chronicled than silence in music. In recent years, that imbalance has begun to change, and I situate my research as part of a new interest in musical silence, influenced by John Cage, by the field of sound art, and by non-musical agents such as noise pollution, the Coronavirus and the effects of global lockdowns.

Research Question

My experimentation at and around the piano has resulted in a question that will guide this research project:

> **How can performers engage with the multiple dimensions of silence in composed music?**

The experience of performing and teaching silences has led me to question multiple aspects of silence. These sub-questions might be summarized as a problematization of the "rest" through a fascination for embodiment and the visual:

- What are potential *markers*[2] of the multidimensionality of musical silence, and how do they shape our experience?
- How do performers embody silence? Is there a gestural vocabulary of silence?
- What does performed silence *look* like? Can the visual component of musical silence be stronger than the auditory?
- Can silence serve a connective as well as a disconnective function in music?

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[2] By markers I mean any cue which leads the audience to expect or experience silence. Markers can be audible or visual, or both; they can be performative or not. They can be iconic, notational, architectural, or ritual. I will define markers in Chapter 2, and illustrate them in the archive and the case studies.

I explore these questions through several strands of my artistic practice: through performing two classic(al) compositions (the piano sonata op. 111 by Ludwig Van Beethoven and *4'33"* by John Cage); through George Antheil's modernist *Ballet mécanique*, as well as through many examples of pianistic silences from my performative practice, which constitute a Noisy Archive of silence.

This topic is relevant because there are gaps in the scholarly and artistic literature:

- The classical "rest" seems insufficient to represent the variety of musical silences.
- There is little visual analysis of what performed silences look like.
- There is little study of embodied or gestural silence.

I suggest that these gaps are a result of some common misconceptions:

- an assumption of silence as the *opposite* of sound;
- the tendency to evaluate silence as a *zero-signifier*;
- an expectation that silence can only be *ineffable*;
- a reluctance to consider silence as a *material* or *presence* with its own rules and parameters;
- the assumption that a performer's gestures during silence are *ornamental*.

These misconceptions are common in musicology, music criticism, and theory. Sound art writing has been more explorative of silence(s) but tends to focus more on the attitude of listening than on the activity of performing. Could one assert that silence might have tangibility, that it could be something to which one should listen, or something that can be isolated from its audiovisual context?

Stepping back from the specificity of musical silence, I believe my research has urgency as well due to silence's intimate relationship with the pandemic, and to the increasing noise levels around us. Some parts of society have gone in quest of silence as a result.

Figure 2: Physicality of silence, visualization of silence, and violent silencing are all tangibles in *Broken Silence* by Sarah van Sonsbeeck (Dortyard, 2014).

Background

When I first began studying silence, I got asked one question a lot, which was, "Why silence?" No one seemed to understand my passion for silence when there were so many interesting sounds around us. But then we had the pandemic, lockdowns, and isolation. During the pandemic, no one asked any more questions—everyone was so excited to tell me their best or worst silence story—my topic had instantly become globally relevant. Silence discussions became commonplace.

Now, after lockdowns, the question people ask me is no longer, "Why silence?" but rather, "Why you?" The world is curious why I, a musician known for loud and raucous performances, switched over to the still and mysterious world of silence. Whatever the psychological reasons, I am quite certain of the musical impetus for my research. It was *Ballet mécanique* by George Antheil. Antheil's brutal measured blocks of silence gave me the idea for this dissertation and eventually led me to question how musical silence is made visible, what it consists of, and what its attributes are. I was particularly fascinated by Antheil's assertion about his silences that "here I had time moving without touching it." This is a compelling idea: that by employing silence, the composer could be pushing time forward without acting upon it. I will come back to this in reference to other silences later.

Manifestations of Silence

I am fully aware of the complexities of the term "silence." The term is employed in conversation, rhetoric, music, visual art, religion, acoustics, diplomacy, and politics. Each of these fields gives the word multiple and sometimes contradictory meanings. Nonetheless, a word must be found within my research on performed music to refer to events where the composer or performer has chosen to *depict* silence. I will call these manifestations "silences," knowing that they might be full of sounds or activity, that they might or might not be indicated with rests in the score, and that they certainly are not silent in a scientific or acoustic sense.

English words related to silence (stillness, peacefulness, mindfulness, rest, calm, pause) are over-used and imprecise. And silence is often defined in either-or dichotomies, usually as a negative. For example, "silence is not sound"; "silence is not noise"; "silence is a lack of vibration." We cannot fully understand silence by deciding what it is not, although it can be a good place to start.

Silentio

The origins of the word are ambiguous. Silence, which came from the Old French around the 11th century, meant "muteness" and was derived from the Latin *silentium*, "a state of being silent," after *silens*, from the verb *silere* "be quiet or still." This one word is already slippery; for example, being mute could imply wanting to say something and not saying it. Silence does not necessarily have that connotation anymore. Being quiet is definitely different from being still (ask any four-year-old). So this etymology seems to complicate things, especially in the dualism of passive vs. active. In what sense does silence refer to an action, or in what way is it an experience? When are we muted, and when are we mute? And have people lost something by no longer conjugating *silens* as a verb? *I silentio, you silens, we all*

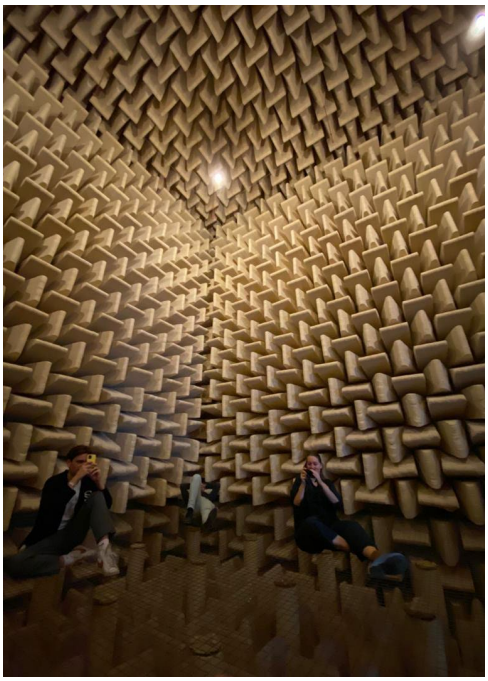

Figure 3: visiting the Anechoic Chamber at TU Delft with architecture students (author's photo, 2022)

silensimus… wouldn't that make our language richer?[3]

The philosopher Georges Bataille characterizes silence as a "slipping" word because it is "the abolition of the sound which the word is; among all words, it is the most perverse, or the most poetic: it is the token of its own death" (Bataille, 1978, p. 16). By speaking of silence, by trying to take its measure, we disturb it, and we break it. Bataille's observation helps to understand some of the ways in which the ideas presented in Cage's 1961 book *Silence* are not as solid as he made them appear. This slipping notion will be fertile ground for discussion in Chapter 4, which analyses multiple performances of Cage's seminal work, *4'33"*.

Scientific Silence

From a scientific point of view, there is no silence in music and no silence on our planet, except in the rarefied context of a vacuum. From a strictly quantifiable point of view, musical silence does not exist. It can be experienced, but it is illusory. Acoustic definitions of silence focus on the silent source (an absence of vibration), or the silent transmission (an absence of reflection), or the silent receptor (an absence/loss/incapacity for hearing) (Rolo, personal communication, February 6, 2020).[4]

Different engineering disciplines have slightly different definitions; for example, antenna engineers speak of an absence of reflections, while aerospace engineers speak of an absence of atmosphere to propagate sound waves. The former definition is focused on the borders of the space, the latter is focused on the air molecules that are the space.

Anechoic Chambers

I have spent many hours inside various anechoic chambers and find them fascinatingly bizarre. Lined with spiky triangles of foam, these are rooms within rooms, totally isolated from the outside world, and eerily quiet. The experience is a disorienting one, like being

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[3] In Dutch, the intransitive verb *verstillen* means to become quiet or make still. Moreover the transitive can be used (*ik stil mijn honger*/I still my appetite), although the meaning is used more as a derivative. A famous example in (now archaic) English is Psalm 65:7, "Who stilleth the roaring of the seas, The roaring of their waves, And the tumult of the peoples." *Stilleth* seems to be used here as both a calming (of the physical waves) and a quieting (of the tumult, of the roaring).

[4] Translating this into musical terms, a silent *source* would be a non-playing instrument; a silent *transmission* would be a non-playing performer; and a silent *receptor* would be a non-listening audience, but not a quiet audience.

on a spaceship in another galaxy. Sounds are deadened so much that you begin to recalibrate all of your senses. And the absence of reflections confuses our sense of self.

John Cage was inspired to write his famous silence piece *4'33"* after entering the anechoic chamber at Harvard University. In that composition, the performer makes no sound for four-and-a-half minutes. But, as I will argue later, his experience of the anechoic chamber, colored by the sounds of his own body, was far from the experience of the composition that made him famous. Neither experience was silent, but for very different reasons. Cage heard the sounds of his heart beating, his blood pumping, his brain whirring, and discovered that there is no silence. Musicologist and philosopher Jael Kraut reduces this to a logical deduction.

> One could summarize this empirical approach in a simple syllogism: whenever any form of hearing takes place, there is always a conscious subject that hears; wherever there is a conscious subject, there is a living body; a living body always produces sound; hence: it is impossible for a living body to experience silence. (Kraut, 2010, p. 19)

There are always sounds around us and within us, even in an anechoic chamber (Cage, 1961; Cobussen, 2022; Gann, 2011). And those sounds underlay our daily experience as well as our experience of music.

Figure 4: a listening exercise while floating on the metal mesh grid in the Delft anechoic chamber (author's photo)

Nothingness

One of the important results of Cage's visit to the anechoic chamber was that it challenged forever the idea of silence as nothingness. Cage's resulting dictum that there is "no such

thing as silence" (Kostelanetz & Cage, 2003, p. 70) became famous, along with R. Murray Schafer's similar conclusions.

Writer and composer William Brooks comments on the audience's deliberate role in (mis)understanding silence:

> Listeners are taught to disregard ancillary sounds. Silences in music invoke a tacit agreement: anything that might be heard is not really *there*. The listener stipulates at the composer's request, that at such times there is *not* something to hear, and the empty moments in the music invite the contemplation of this possibility. (Brooks, 2017, p. 109)

Despite the artworks and writings of Cage and Schafer, silence is often mislabeled as a *zero signifier*, as if nothing is there, for we have been taught to disregard those ancillary sounds. Those are the very sounds that Cage wanted us to experience amongst the silence. For Cage, there was no zero signifier. Silence was not nothing. Recent psychological and philosophical research at Johns Hopkins University by Rui Zhe Goh, Ian B. Phillips, and Chaz Firestone gives scientific credence to the theory that silence has tangibility and thingness. It is not nothingness; it is a different kind of somethingness:

> Do we only hear sounds? Or can we also hear silence? These questions are the subject of a centuries-old philosophical debate between two camps: the perceptual view (we literally hear silence), and the cognitive view (we only judge or infer silence). Here, we take an empirical approach to resolve this theoretical controversy. [...] In all cases, silences elicited temporal distortions perfectly analogous to their sound-based counterparts, suggesting that auditory processing treats moments of silence the way it treats sounds. (Goh et al., 2023)

The conclusions of their paper are only preliminary, and more research is necessary. But from the viewpoint of a performing musician, I will also argue that silence has tangibility.

Architectural Silence

From an architect's point of view, silence is made possible by an acceptably low level of background noise, often measured in decibels. The better isolated the building, the lower the decibel level inside. But also the higher the implementation costs. For dedicated buildings in which the sonic experience is crucial, designers/acousticians evaluate the background noise level via a non-linear curve based on perceptual testing called the Noise Criterion (NC), which is more practical than the decibel scale (it is more oriented towards the capacities of the human ear). For example, NC25 is an appropriate level for a teleconference room and NC15 is the threshold of hearing. The ultimate quiet experience,

sought after in recording studios, is NC1, but it comes at "a high price for the client," according to architects who specialize in acoustics (Sacks et al., 2013).

Anechoic chambers such as the one Cage "heard" are even quieter and are evaluated in decibels.[5] Most have a background noise level in the range of plus 10 to 20 dB, but the levels inside Orfield Laboratories in Minneapolis are probably the quietest on our planet, with a background noise reading of minus 9.4 decibels (Cox, 2014).[6] None of these places are absolutely silent, because there are inevitably mechanical sounds (electricity, ventilation, computer systems), and just as inevitably also natural sounds (vibrations in the earth). Nonetheless, humans perceive these spaces as silent due to our limited hearing capabilities.

Situational Silence

Where the built environment has been designed to create sensations of rest or repose, we often "hear" silence that may or may not be there. More commonly, we experience architectural silence in terms of *situational silence*. When I was staying at the Rustpunt monastery in Ghent in 2019, I worked on recording the sounds of the walled garden. Visitors often remarked to me how silent it was in that verdant space with its ancient brick walls and leafy trees. Yet my recordings of that space are a frustrating mix of sirens, beeping cars, clanging tramways, and more. Reality is louder than we assume, even if a place seems situationally silent.

Silence in an architectural situation might also be very loud. I made a series of radio programs about the Cathedral of Notre Dame in Paris between 2010 and 2015. Frequently the sound inside was louder than outside. Yet the majority of tourists experienced it as a place of silence. This effect was created by a combination of monumental physical space and spiritual expectations. Yet the sonic reality was a high level of background sounds, a wash of white noise punctuated by doors slamming, coins clinking into metal boxes, cameras clicking, priests chanting, and tour guides narrating the experience in multiple languages. Notre Dame offered a qualified experience of silence despite a quantified experience of noise.

► AUDIO: https://www.researchcatalogue.net/view/1712958/2917575#tool-2931221

[5] The decibel scale itself is logarithmic scale related to humanly perceivable sounds (also a theoretical construct since hearing is so individual).

[6] To put this in scale, a whisper is about 30 dB; and the theoretical lower limit of human hearing is 0 dB.

Kraut offers insight on how composers usually work from a concrete, textured space instead of the "chimerical horizon" Jankélévitch envisaged:

> Silence considered as an empty background, and therefore as the perfect condition for music to appear, means considering silence as a kind of nothingness or void. But what if the "silent background" is not nothing nor empty? Silence would not always be one and the same. Like the canvas, any background of music has what one may metaphorically call its own "texture". Many composers considered the silent background in which any musical event takes place not as an "chimerical horizon" but as a concrete space. (Kraut, 2010, p. 18)

Concert halls, temples, churches, monasteries, cemeteries, and tunnels are marvelous examples of spaces that project or enclose silence. Although this dissertation focuses on performed silence, I will periodically reference architectural/situational silences as a canvas that definitely can influence the performative experience.

Even assuming that the background noises in the space and around the music are very quiet, it still is difficult to hear silence within a musical experience. Schafer writes:

> The myth of silence has been exploded. From now on in traditional music, for instance, when we speak of silence we will not mean: absolute or physical silence, but rather merely the absence of traditional musical sounds. (Schafer, 1977, p. 12)

I would nuance his statement. We can hear silence in a Chopin nocturne even while the pedal is still holding resonance from previous notes. That resonance is still a traditional musical sound but offers a listening experience of silence. Philosopher Roy A. Sorenson makes a key distinction: "You can hear *that* it is silent by means of a sound. But you cannot hear silence by means of a sound" (Sorensen, 2009). Auditory culture researcher Marcel Cobussen puts it slightly differently: "We can only experience silence *through* non-silence" (Cobussen, 2002). New research in psycho-acoustics (Goh et al., 2023) has suggested that we can perceive silence in some controlled situations, but their experimentation also involves sounds, and it is difficult to know to what extent those sounds influence the perception of silence. Kraut suggests a schema for understanding how the audience selectively "hears" silence at an orchestral concert.

> While listening, one passively accomplishes an intentional distinction between those sounds that belong to the music and those that occur in the environment. On the basis of this passive though nevertheless intentional consciousness, one has the possibility to only perceive the intended sounds. […] On the basis of this possibility, one is capable of hearing only the music the orchestra plays. The

> environmental noises – the whisperings, mumblings, coughing of the public, the humming of electronic devices, and other sonorous turmoil – disappear into the margins. (Kraut, 2010, p. 98)

All these suggestions relate back to a core problem in my research: it is impossible to hear silence as an isolated phenomenon. It always appears in a context or relationship, and the audience can passively (or intentionally) make non-intended or non-musical sounds disappear into the margins.

As a contrasting example, the phenomenon of hearing silence *from the audience* is well-known amongst musicians: violinist Jenna Sherry recently told me about performing with John Eliot Gardiner in Budapest and how the silence from the Hungarian audience was palpable. Onstage, she and the other musicians could hear the silence, feeling the audience's participation in the work: "We felt an intentional silence—an active communal silence that's being created, and not accidental, not an absence: it was a focus of created intention which allowed something else to appear" (Sherry, interview, January 20, 2023). Sherry's experience—though unquantifiable—is shared by many musicians.

Audience Silence

The 18th-century diplomat and music patron Gottfried van Swieten is often credited with setting modern European standards of audience silence:

> [Van Swieten] exerted all his influence in the cause of music, even for so subordinate an end as to enforce silence and attention during musical performances. Whenever a whispered conversation arose among the audience, his excellency would rise from his seat in the first row, draw himself up to his full majestic height, measure the offenders with a long, serious look and then very slowly resume his seat. The proceeding never failed of its effect. (DeNora, 1998, p. 27)

This silencing of the audience occurred as well in France (and much later in Italy) for a variety of reasons ranging from performer safety to the rise of operatic divas, to the increased status of composers (Verdi, Wagner, Mahler) who demanded respect for their silences and to political fears of riots (especially in France) (Richard, 2021). More than a century later, audience silence barely needs to be enforced and has come to indicate respect and attentive listening during classical concerts. This is what musicologist Juliana Hodkinson refers to as the *silence of decorum* (Hodkinson, 2007, p. 32).

Tacet

An instruction used often in musical scores is *tacet*, a term that first appeared in late medieval chant (Hodkinson, 2007, p. 26). *Tacet* is the imperative to stay silent, noted in orchestral parts. I remember sitting in the back of a student orchestra facing a blank page (only marked *tacet*), waiting interminably for the end of a Mahler symphony so I could finally play the cymbals. Thus, the marking *tacet* often means "count like hell" to the symphonic trumpetist or percussionist, who might otherwise doze off after 300 empty bars. *Tacet* is the instruction, and *tacit* is the adjective meaning expressed in silence; implied, but not made explicit; done or made in silence; for example, *tacit* consent is consent by silence or by not interposing an objection.

Taceo and *Sileo*

In the original Latin, the verb *taceo* meant silencing something already existing, whereas *sileo* is the void of something that never comes to be. Roland Barthes also makes the distinction in his lecture series The Neutral (Barthes, 2005). He interprets *tacere* as verbal silence, while *silere* suggests stillness, the absence of both movement and noise. Barthes poetically uses *silere* to refer to things, to the night, to the sea, to winds. "Hence a series of very beautiful ordinary metaphors: the moon turned invisible at its waning, the bud or the tendril that hasn't yet opened up, the egg that is not yet hatched: *silet, sileunt*" (Barthes, 2005, p. 22). In his definitions, silence is not a nothingness, but rather offers a potential for somethingness.

Stillness

The word *stillness* can be helpful when discussing silence and is a familiar term from mindfulness, yoga, and other reflective practices. John Cage, himself into meditative practices, spoke often of quieting the mind (Cage, 1961). When you get into the flow during a yoga session or meditation, you might well be experiencing stillness as physicality, a sort of mental silence generated through focused bodily activity.

Indeed, stillness can be very active. When I am onstage playing "minimalist" music of Philip Glass or Simeon ten Holt, I get into a similar zone, a trance-like state. This experience of a repetitive activity that quiets the mind resembles silence, but a silence that is physical and euphoric. So it is more an active stillness: involving physical repetition, a chanted "ommm," or a steady rhythmic pattern. In concerts of Henryk Górecki, Simeon ten Holt, or Arvo Pärt, audiences often experience a silence *behind* the music, a sort of trance-like stillness.

Ma

Since the western words for silence are overloaded with societal, spiritual, and political baggage, some writings on sound adopt the Japanese word *ma*. Japanese traditional art, including music, describes *ma* (間) as the space between things, a far more eloquent and useful trope than the western idea of mere "emptiness." This centuries-old concept is illustrated in scroll paintings, in Zen gardens, and in the design of temples. In modern terms, any graphic designer today is familiar with the concept of "white space" and its usefulness in creating tension and coherence on the page. In terms of *ma*, silence might be perceived as a temporal space to reflect, feel, or imagine connections. *Ma* itself is as full of connotations and baggage as western words for silence, if not fuller. Japanese composer Toru Takemitsu writes:

> To the sensitive Japanese listener [...], the unique idea of *ma*—the unsounded part of this experience—has at the same time a deep, powerful, and rich resonance that can stand up to the sound. In short, this *ma*, this powerful silence, is that which gives life to the sound and removes it from its position of primacy. So it is that sound, confronting the silence of *ma*, yields supremacy in the final expression. (Takemitsu & Ozawa, 1995, p. 51)

George Crumb was inspired by ideas of unsounded resonance within *ma* to better communicate with performers. Not only do his scores make extensive use of white space in their layout on the page, but he pioneered new notational depictions of silence.

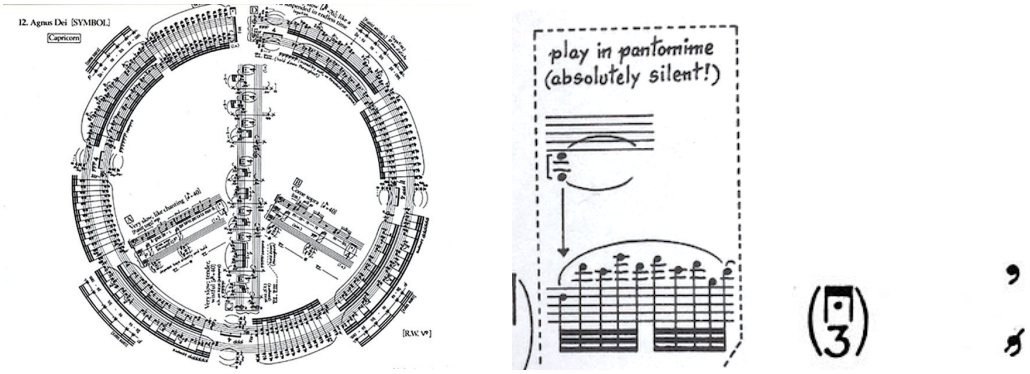

Figure 5: Notational innovations of George Crumb (from left to right): *Agnus Dei* for solo piano; the ending of *Vox Balaenae*, in which the pianist plays silently on/over the keys; a precise 3-second pause from *Makrokosmos*; commas as breaths, and slashed commas which are shorter, more like gasps (Edition Peters, 1972).

Oddly, given the depth of meaning of *ma* in Japanese visual art, traditional Japanese musical notation fails to indicate silences with any nuance. A comma or change of row (column) suffices to indicate silence or the end of a phrase in traditional musics (Wada,

interview, 2019). In this sense, traditional Japanese silence notation is not more helpful than its western counterpart.

Liú bái

In Chinese art and culture, *liú bái* (留白) can have layered and contradictory meanings: it can mean leaving empty space in a work of art; or the space where the brush does not touch the canvas; or setting aside idle moments in life; or (oddly enough) leaving a message. As an art concept, it has continued importance in experimental Chinese cinema. And *Liú bái* can also imply a framing function.[7]

Figure 2: *liú bái* characters (Zhang, 2021)

Shin

Another word that could give heightened dimensionality to western notions of silence is the Japanese term *shin*, much like "hush" or "shhhh" in English, yet different. Manga translator Polly Barton explains:

> '*Shin*' is far more prevalent as a straight-up sound effect, particularly in contexts like manga, where the long midbar of an enormous しーん is often found traversing the awkward space between two characters, or spreading through an entire room to indicate the voluminousness of the silence. (Barton, 2021)

In Barton's example, the concept is made visible, marking silence dramatically on the pages of manga art—an explosion of silence illuminated on the page, a tension between two characters (Barton, 2021).

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[7] Film theorist Lyuwenyu Zhang has considered the "space around" in new Chinese cinema, giving as an example filmmaker Jia Zhangke, who uses *liú bái* not so much as a blank or a void, but rather as a decorative filigree behind the main action (Zhang, 2021).

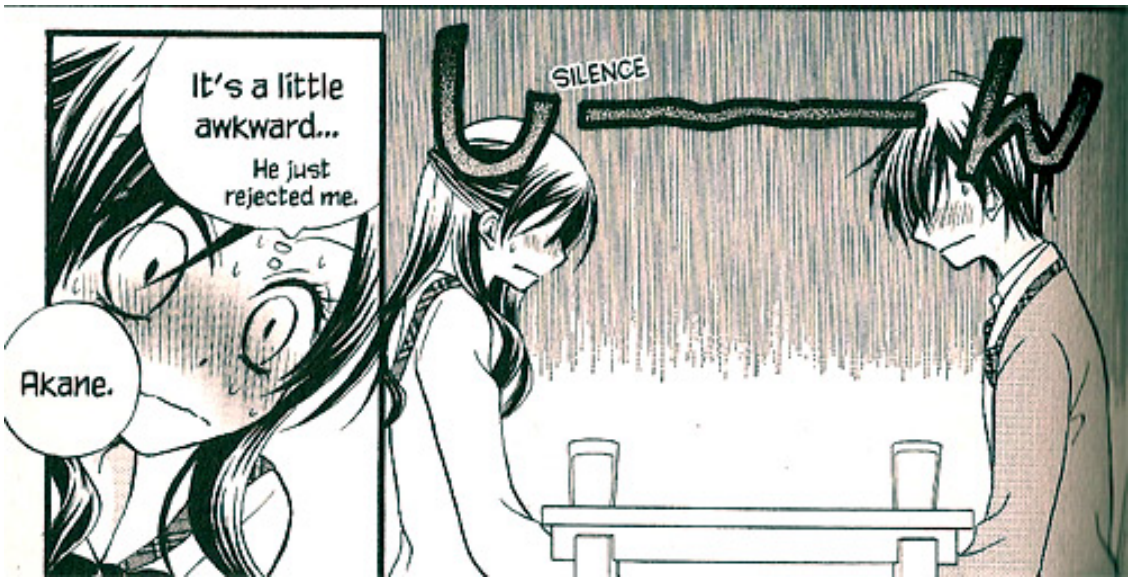

Figure 7: manga frames translated into English, in which the original word しーん has been retained for a powerful graphic result (Barton, 2021)

Rests & Breaths

For singers, the breath is a straightforward physiological necessity. Vocalists cannot sing without breathing in between. For them, *breathing is silence*, and that makes perfect sense given their instrument. The silences between phrases are fundamentally a part of the sound production. This may be part of the reason that the notation of silence arose long after the notation of notes: the silences were obvious to the singers and so did not need to be notated. At some point in the medieval period, a graphic system of spaces between phrases was replaced by commas.[8]

Notated rests would seem to be silences, *ipso facto*. But it is not that simple. For example, from a pianistic viewpoint, a rest may often be pedaled (enabling the previous sounds to resonate). Or a rest may have the function of letting one hand play without the interference of the other. Rests may visually indicate the end of a motive in a Bach fugue without connotating silence because other motives are in progress simultaneously. Rests could let another part or voice come to the foreground. Or rests could be included to enable the performer to leap across the keyboard to a different register. Sometimes rests mark a space in the score in one or both hands, but are only there for counting purposes. These are some of the many situations in which the pianistic rest does not indicate silence.

[8] Hodkinson's impressively complete catalogue of silence notation is an important reference on the history of silence symbols (Hodkinson, 2007) and has been helpful in tracing the evolution of rests.

The word rest can also suggest "at rest," which implies a waiting or attentive stance, or even a relaxed or asleep condition. So, for example, the left hand might be "at rest" at a given moment while the right hand performs a solo. The presence of the rest is also, in some ways, a reassurance that the musician or the musician's hand is still present in the performance, whether active or non-active.

The durationally specific rest is not the only means of suggesting silence in a score. Here are additional common notations indicating breathing and pauses, which will be further examined in the next chapter.

Figure 8: comma, breath or hesitation, *fermata*, pause or breath, *staccato* dot, *staccatissimo* triangle, *caesura*

Markers for Silence

I propose the term *markers* to describe cues that communicate dimensions of silence. Markers are visible or audible signals used to shift attention and thus *impose* silence, *summon* silence, or *shape* the perception of silence. A performer's gesture while interpreting the notated rests can be a visible marker for silence. Or a performer's breathing can be an audible marker for silence. The notes themselves can offer audible markers that change the audience's impression of silence. Dimming lights or a closed curtain can summon silence in a room. In Chapter 2, I will discuss markers in more detail, and in Chapter 3, I will give concrete examples from my practice.

Framing and the Work

Framing—conceptually closely connected to markers—can be created by the silence surrounding the work; conversely, sounds can frame silences (see Chapter 2). Or the frame can indicate the edges of silence, as in performances of *4'33"* (see Chapter 4). There is always framing of some sort, but it can take many forms. In practice, it is not always clear where the frame ends and the artwork begins, nor vice-versa. Markers may indicate the edges of the frame. Sometimes, it is difficult to distinguish the frame, especially in Cage's *4'33"*. The audience and the performer may experience the frames at different times. One must sometimes guess where the music begins and where it ends. Chapter 2 will discuss the porosity of frames. And in the Cage chapter, I will show that *looking at*—rather than *listening to*—the performance can sometimes lead to a clearer delineation of inside and outside, of start and stop.

This may lead to the question about the definition[9] of "the work." Where is it, and when does it start? Following Östersjö, I define "the work" as encompassing notation, score, expected performance practice, historical context, and performer's interpretation. Hence, I use the term "work" broadly, thus recognizing that a work is no finalized entity but is constantly evolving. (Within this writing, the term "artwork" is used in a looser manner, that is, as a less formal label.)

Embodied Silence/Gestural Silence/Eloquent Silence

Embodiment and *gesture* have multiple meanings in music and in other performance-related disciplines. For clarity, my use of these terms aligns with violinist and researcher Barbara Lüneburg's ongoing research project on embodiment and re-enactment (Lüneburg, 2023; Lüneburg & Ciciliani, 2021): embodiment is the overall collection of active performer movements, gestures, postures, facial expressions, and passive performer choices such as hairstyle and costume. Embodiment is also a technique used to imitate another performer's physicality. Finally, it can be used to describe a specific corporeality or tangibility, as for example, the embodiment of a silence through a specific gesture.

Gesture is the performed movement and alignment of arms and legs, fingers and toes, torso, head, and facial expression, in relation to the instrument.

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[9] Östersjö (2008, p. 70) writes: "Assigning meaning to a musical work through performance is achieved by way of a critical reading of *the work* (and not only the score). And further, if we adopt the notion of a musical discourse made up of authoritative texts in the form of scores as well as performances, this means that a performance of *a work* might in many cases also involve an interpretation of previous performances as well as the score, its musical tradition and performance practices."

Figure 9: Evgeny Kissin performing the second-bar rest of opus 111

Gestural silence can also be described as embodied silence. The gestures or embodiments are not the silence but are cues or markers for it. Indeed some embodiments may be wildly distracting or even noisy. For example, this figure shows pianist Evgeny Kissin performing a rest at the start of Beethoven's opus 111. He embodies the silence in a very physical, powerful gesture. My argument that the visual plays a crucial role in the experience of performed silence will be supported by analyses of embodied silence.

Eloquent silence communicates from the performer to the listener; non-eloquent silence might have a functional role but does not have rhetorical, communicative value in the performance. Eloquent silence is hardly a new idea for musicians: Baroque music performers, for example, employ rhetorical tools that parallel eloquent silence: *abruptio, aposiopesis* (pause), *dubitatio*... The pianists in the case studies of Beethoven's opus 111 (Chapter 5) are creating eloquent silences, as are the professional and amateur musicians in the examples of Cage's *4'33"* (Chapter 4).

Performed Silence can be eloquent but also purely functional. Following the notation of a score, a performed silence is literally the performance of a notated rest. But it might not have much to do with audible silence. A performed silence might be played with the pedal fully down, but if the musician eloquently embodies the silence, the audience will understand it as silence. It can also be simply functional, as in the gesture a pianist makes during the rest to move their hands from one note to another.

Non-playing

Pianist and composer Paul Craenen has written a description of a fictional silence concert. The three featured pieces are John Cage's *4'33"*, Dieter Schnebel's *Nostalgie*, and Mauricio Kagel's *Con Voce*. One of the ideas Craenen introduces to describe this intriguing performative situation is that of the non-playing performer, who is acting against audience expectations: "The pianist makes herself *and* the public present through her non-playing" (Craenen, 2014, p. 51).

Is *non-playing* a definition of performed silence? I wonder if the non-playing body exists—is it possible that the body is always playing? Non-musicians might have non-playing bodies, but a performer always has a playing body, certainly onstage. This said, I think that Craenen is suggesting a "non-" that refers to an expectation of the audience that is not fulfilled. But one could also describe the non-playing as a "not-filling," thus leaving space

for the audience to experience the performance of silence. The non-playing abstract/political silences of Dieter Schnebel or Mauricio Kagel are in stark contrast to the dramatic and rhetorical silences in the music of Beethoven, in which the player is communicating emotions, sculpting time, in intense communication with the audience.

Non-playing might also be a state of inactivity, which is characteristic of artworks that are about and consisting of silence, for example, Erwin Schulhoff's *In Futurum*, Cage's *4'33"*, or Marina Abramović's *The Artist is Present*. [10]

Meta-Silences

Composer Ferruccio Busoni, in his 1907 manifesto *Sketch of a New Esthetic of Music*, launched a new silence discussion for the 20th century:

> The tense silence between two movements—in itself music, in this environment—leaves wider scope for divination than the more determinate, but therefore less elastic, sound. (Busoni, 1911, p. 23)

Although Busoni was compositionally conservative, he proposes an idea that is indeed avant-garde for its time: The non-notated silence between movements is itself music, and silence has a potentially wider scope than sound. Silence is more indeterminate and therefore more elastic. What is compelling is his use of the words *divination* and *elastic* to describe these silences. This is the earliest musical reference I have found that directly acknowledges the malleability of musical silence.[11] These intra-movement silences are *meta-silences*, in the sense that they are non-notated and the product of context or cultural rituals, assumed by audience and performer alike.

A common example of a meta-silence is the silence between movements; a rare one is the death of a performer onstage. The philosopher Vladimir Jankélévitch gives another example: *prophetic silence*, such as when the conductor taps his baton before the performance (Jankélévitch, 1961, p. 165). These meta-silences are not notated, but ritually standardized and culturally understood by Western classical audiences. These silences can themselves be anticipative, as before the start of an opera; or retrospective, as at the awesome end of Anton Bruckner's *Te Deum*; or reflective, as within and surrounding

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[10] In Chapter 3 these will be referred to as "absence art" (Farennikova, 2019).

[11] Saint Augustine possibly did suggest a precursor of elasticity through his term of *Silentia voluntaria* (see next chapter).

Psalom by Arvo Pärt. Meta-silences can also "frame" a musical work in the case that the performance starts and ends in silence.

A Working Model of Performed Silence

In light of some of the gaps listed above, silence can be interpreted not only as a separator but also as a knot or a tying together. Silence might be simultaneously a continuity and a discontinuity, both a *knot* and a *not*.

The inspiration for this idea comes from architectural theory, specifically the ancient Greek theory of tectonics, which can refer both to cutting and joining, as explained by architectural theorist Udo Garritzmann and philosopher Maria Karvouni:

> Karvouni observes an analogy between the tectonic operation of cutting and joining, or division (*diaresis*) and synthesis (*synthesis*) that the *tekton* and *architekton* perform, and similar dual operations 'in cosmogonic myths, in mathematical accounts, in philosophical speculations, and in the discussion and definition of art in general.' (Garritzmann, 2021, p. 21)[12]

Figure 10: still image from Nicoli's *No Entry/No Exit* (Koop, 2009)

Transposing across disciplines may be fertile inspirational territory for thinking silence. Silence could serve a tectonic function in performance, both linking and separating the musical components around it. So many discussions of musical silence fall into the confusion of paradox or the traps of dichotomies. Silence is this or that. Silence is absence or presence. Silence is on or off. Theoretical dichotomies may obscure the complexities of silence, but in practice composers can use these same dichotomies to magical advantage. This is illustrated in a multitude of musical examples, such as Argentinian composer Cecilia Arditto's composition *Straal*, in which light and sound are made equivalent, or Italian composer Andrea Nicoli's *No Entry/No Exit*, which has a rapid density of silenced notes that cannot be played on the keys because the lid is closed. Dutch filmmaker Nelleke Koop's video of my hands performing this composition creates a visual synesthesia marvelously illustrating this light/dark vs. sound/silence dichotomy.

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[12] The 19th-century German architect Gottfried Semper pioneered the modern use of the word tectonics in considering the relationship between division and synthesis, especially in respect to the woven materials which may have constituted the first huts or constructed human habitations (Garritzmann, 2021).

But if *diaresis* and *synthesis* can be merged into one tectonic entity, then silence is no longer one side of a dichotomy, but rather both sides of the dichotomy simultaneously. The analysis of Karvouni's work above (Garritzmann, 2021, p. 21) suggests an analogy between sounds and bricks, which is far from accidental: like notes in a composition, bricks get all the attention in an architectural façade. The grout, that cement which both connects and divides them, is relatively rarely considered. Yet, one cannot exist without the other. It is unnecessary to take the metaphor too far and claim that the bricks *are* notes and the grout lines *are* rests. But I draw attention to this rough analogy because both elements have a structural function in architecture, just as notes and silence have in music. The bricks cannot hold together without the grout, yet the grout has no strength without the bricks.

A similar structural importance for silence can be inferred by a visual analysis, in this case, of Beethoven's last piano sonata. The opening bars are here represented without the notes, and then without the rests.

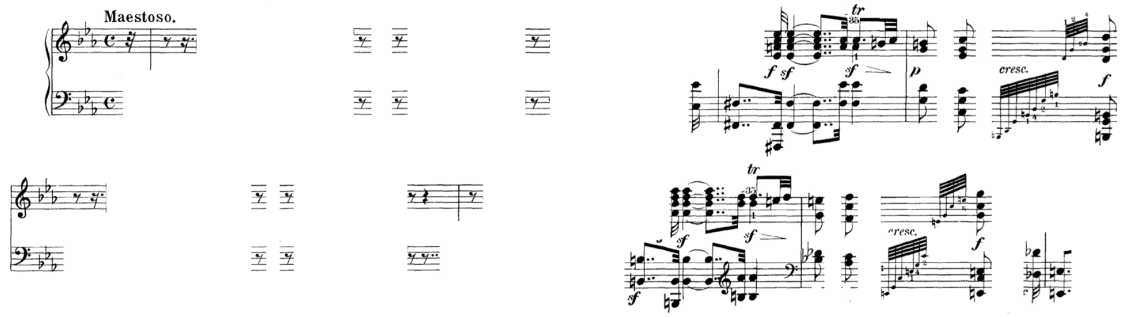

Figure 11: opus 111 (Edition Peters, 1974)

This graphic is very useful for understanding the structure, but it also suggests a kind of dichotomy that is foreign to the actual music. Looking at the graphic does offer insight into silence tectonics: one part cannot exist without the other. The insight here is perhaps the simultaneity of silence in a musical context—its paradoxical ability to be both sides of the dichotomy at once: positive and negative, on and off, background and foreground. Just as a knot connects one piece of rope to another rope, so does silence connect disparate elements in a piece of music. Karvouni observes that

> *Techne* [...] is the ability to divide and connect. This requires delimitation (assigning limits, measures, proportions) and synthesis (joining, composing, assembling). In doing so, the *tekton* imitates the cosmogonic operations of bringing things into existence. (Karvouni, 1999, p. 108)

Silence has the same ability to divide and connect. In my performative model, silence is assigned attributes of delimitation and assemblage. I see the performer as the *techne*, the ancient Greek artisan who cuts and joins stone.

As an interpreter, I relish the challenges and opportunities involved in interpreting a work that exists only in the composer's mind or on paper. Interpretation means translating those ideas into a visceral, palpable, tangible, performative reality. And interpretation involves an enormous amount of creativity. The not/knot model of silence will merit the embodiment that performers award it onstage, as well as the absence that the composer indicates through notation.

The immense difference in silence interpretations in the following chapters suggests that the composer's notation often has little influence over the on-stage performativity of the rests. In Chapter 5 I will suggest that rests offer an affordance for classical pianists to create freely, to assign their unique proportions to the performed artwork. In this sense also, the rests offer an opportunity for the performer to create knots that join the musical elements together or separate them dramatically. Despite the notation of rests as merely pulse or duration, the performative reality is far from merely counting out rests. These rests are *eloquent silences* that are brought to life by the performer as *techne*, joining and cutting at just the right moment.

Methodology

I am a pianist, curator, and podcaster. Experimentation across genres and mediums plays a daily role in my artistic practice. My work as a pianist is varied and complex. I have a preference for large-scale projects, either experimental or historical, leading to public broadcast or performance. Often this involves guiding an audience through the densities of the artwork, giving them the toolkit that they need for understanding, appreciation, and also enjoyment of the stories and philosophy behind the composition.

Figure 12: designing a silence instrument to orbit earth on the International Space Station (author's photo, 2020)

Now, I am engaged more actively in artistic research, at times moving away from the empirical work of learning a pre-composed structure and focusing on the dimensions, functions, and performance of silence. Like a particle physicist, I am attempting to drill down towards significant but "inaudible" units of musical matter.

I have been using the phrase *research into and through art* to describe what I am doing. Brian Masumi calls it "Thinking Art" and says that the last thing it should be about is forcing art to fit into other disciplines and categories (Massumi, 2008). And this is what makes my video explorations an ideal method. I use them to explore and explode the tangibility and intangibility of silence. The thinking happens at the instrument in the process of practicing and learning the music. This thinking is highlighted in my videos (see especially Chapter 3, my Noisy Archive).

Citing Freud, Hans-Jörg Rheinberger argues that it is difficult to have a structure when investigating new things: on the one hand, there is a need for such a structure; on the other hand, if the structure fully exists, there is no need to research. Constantly defining and redefining the investigative structure should therefore be part of each research process, much like a meandering river:

> The process of investigation does not and cannot come to an end, for the very reason that there is no possibility of anticipating the future objectal constellations that accrue from it. Instead of following the entropic track toward a stable equilibrium, the material activity of pattern formation we call research obeys the rules of a never-ending ramification. (Rheinberger, 1997, p. 15)

I would certainly describe my research as meandering, as it moves through a never ending and constantly branching ramification of time, mechanics of performing, and waves of history. Throughout this dissertation, I will draw experiential examples from my research projects, including silence concerts, collaborations with design students and composition students, podcasts, radio shows, my prior work in hospitals in Paris, etc.

Finding Ways to Study Silence

Much silence research and discussion already existed, even before Cage's "discovery" of silence. Especially in the early part of the 20th century, composers and interpreters were creating musical silences with new functions, affects, and emotions. Part of my research has been to collect these functions, affects, and emotions and to care for them, investigate them, imitate them, understand them, and employ them in performance.

Throughout my research process, I struggled with the format that would best express the results. Early on in the process, I envisioned a taxonomy of silences, made flow charts of the ontology of silence, and began working on an alphabet of silences. The beginnings of this alphabet are suggested in the conclusion of this dissertation, and it attempts to transcend the sterile notation of our common musical rests. As I worked on this dissertation, I realized that rather than drawing symbols of silences (creating an alphabet), my purpose would be better served by creating a digital archive of those silences. Each entry in the Noisy Archive (Chapter 3) offers an example of silences and includes videos, audio, and text to demonstrate and explain the relevance and singularity of that particular musical silence.

Even though I argue against silence's ultimate ineffability, I am still aware of its *insaissibilité* or ungraspability (Jankélévitch). Silence is difficult to qualify and quantify. So the artistic research process seems to call for some techniques of comparison, some fair methods of cognitively, creatively, and affectively approaching performed silences. I have chosen three major paths for comparing and studying silences:

- *Listening/watching/performing* based on films and photographs of other performers;
- *Personal reflection videos* based on my (tacit) knowledge and performing practice;
- *Waveform analysis* drawn from my experience editing radio programs.

These three techniques are complementary and offer multiple perspectives on each examined silence.

Listening/Watching Practice

Starting in 2021, I began to make videos of myself performing silences, and copying other performers' silences to understand their techniques. The videos exist as instantaneous

means of experimentation to catch my thoughts while making sound/silence. These new reflections and experiments accompany my writing by encapsulating acts of play that generate immediacy of thought, complementing—and bouncing off—the writing. These have been my "future-generating machine," leading to "repetition with difference" (Rheinberger, 1992, p. 311). This rehearsed and re-rehearsed practice is expressed via annotated musical scores and videos in which I perform reflections on other performers' embodiments.

Reflection Videos

The primary focus of the Noisy Archive is personal video clips of many pianistic silences drawn from the classical and contemporary repertoire, as well as works composed for me. In these videos, I engage with the performative complexity, tacit knowledge, and technical challenges of creating eloquent silences.

Figure 13: studying and learning from opus 111 videos in my studio (author's photo, 2022)

Waveform Analysis

The impetus for looking at waveforms of classical performances comes from my work with graphic designer Szymon Hernik and was influenced by the writings of musicologist Elizabeth Margulis. Here is her example of silence/rests at the beginning of Beethoven's opus 106 piano sonata, in a performance by Alfred Brendel.

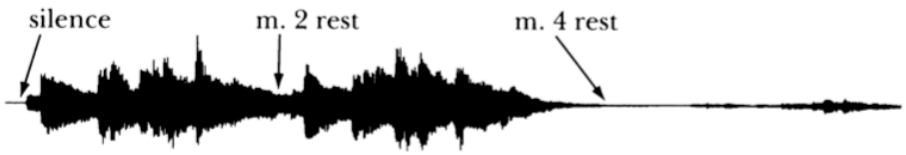

Figure 14: Margulis's waveform analysis (Margulis, 2007, p. 247)

This illustration immediately reveals that rests do not correlate directly with silence (the rest in measure 2 contains much sound, while the rest in measure 4 contains almost none). This is evidence of the relativity of silence within the performative context. As Margulis points out, we perceive both rests as silence even though they are each a unique mix of audible interference—the resonance of the hall, the lingering notes of the piano, the rustling of the audience, and the pianist's movements.

Margulis's ideas mesh with my suggestion that notated rests, acoustic silence, and eloquent silences have an uncertain (not one-to-one) correlation with each other. I use waveforms throughout this thesis to illustrate examples of performed silence.

Background Literature on Silence

This section underscores the breadth and depth of silence as an academic, social and artistic topic. The works below are not necessarily at the center of my research, but they constitute a useful collection that can offer points of departure for researchers who wish to pursue additional research on silence.

Notational Background

The notation of silence in musical scores was a crucial point of departure for my research. Understandings of silence notation have evolved significantly in the last century. Hugo Riemann was among the first modern theorists to categorize performed rests, distinguishing five types, including an accentuated rest (Riemann, 1903, 1884). Wallis Dwight Braman expanded upon Riemann's work by compiling around 400 examples of composed silence, predominantly from classical composers. Braman's definition of silence as "time without sound" suggests contemporary discussions of musical silence, particularly relevant to Bohdan Syroyid Syroyid's analysis of silences in Webern's works (Braman, 1956; Syroyid, 2020). Syroyid's research offers a comprehensive historical study of rests, examining and improving on taxonomies of notational silence and influencing my ideas on the complexities of performed silence.

Thomas Clifton discusses the poetics of musical silence (Clifton, 1976) with examples from Haydn to Mahler (plus one outlier: Elliott Carter's piano concerto). Toru Takemitsu has written extensively on silence from a composer's perspective in Western and Japanese contexts. He writes that the "powerful silence of *ma* [...] is that what gives life to sound and removes it from its position of primacy" (Takemitsu & Ozawa, 1995, p. 51). Junichirō Tanizaki's intra-disciplinary book on shadows in Japanese culture (Tanizaki, 1977) offers unorthodox interpretations of silence, which often overlap with the suggestions elucidated in *The Neutral* (Barthes, 2005), and could be a point of departure for additional research.

Silence and Language

Many of my ideas about communication within or by means of silence arose from studying silence in linguistics and discourse. For example, Max Picard demonstrates the tension between verbal and non-verbal communication. His observation that "the absence of language makes the presence of silence more apparent" provides a critical framework for understanding how silence functions beyond sound, especially in moments of linguistic failure or inadequacy (Picard, 1952). This idea is expanded upon by Kris Acheson, who contends that silence can become an expressive tool when words fall short, and Ikuko Nakane, who identifies multiple forms of conversational silence across cultural contexts (Acheson, 2008; Nakane, 2007). These findings are given depth by Harahsheh's cross-cultural studies on silence in English and Arabic discourse, highlighting the universal role of silence as a conversational pause (AL-Harahsheh, 2012), relevant to many of the examples in my archive.

Silence and Silencing

To understand silence beyond a musical context, I researched silencing that operates as a mechanism of power, control or resistance. Michal Ephratt distinguishes between "eloquent silence" and "silencing," emphasizing that the latter represents a deprivation of expression rather than a choice (Ephratt, 2008). Political and societal silencing can be investigated through feminist and postcolonial lenses in examinations of silence as a tool for oppression, particularly in gendered and political contexts (Caprioli & Crenshaw, 2017; Clair, 2020; Dhawan, 2012).

Silence in non-western cultures takes considerably different forms and conveys meanings in dramatically different ways. These three sources provide contrasting challenges to European assumptions about silence. In *Eloquent Silence among the Igbo of Nigeria,* Gregory O. Nwoye discusses silences in Igbo culture within bereavement rituals, marriage proposals, greetings, and many other situations as a means of "managing highly charged situations and relationships" (Nwoye, 1985). In *Teaching Spirits: Understanding Native*

American Religious Traditions, Joseph Epes Brown and Emily Cousins discuss silence and the sacred through the art of storytelling, oral traditions, and the compromise of tribal languages (J. E. Brown & Cousins, 2001). In her book *Knowing and Learning: An Indigenous Fijian Approach*, Unaisi Nabobo-Baba theorizes a taxonomy of silences in a traditional Fijian community, highlighting the immense complexity and importance of silence within the hierarchy of the Vugalei community (Nabobo-Baba, 2006).

Silencing in international relations is studied by Elisabeth Schweiger, who applies Cage's and Wittgenstein's ideas to understanding legal judgments and political assassinations (Schweiger, 2018). Shani Brown's thesis, "Cartographies of Silence" (Brown, 2013), discusses torture, gender, secrecy, and war crimes. Although I do not engage directly with political silencing in my dissertation, these sources provided essential background understanding and are relevant to Part 5 of the Noisy Archive.

Samuel Beckett's work constitutes an important 20th-century reference for the intersection of (musical) language and silence. David Metzer links the use of textual silences in the plays of Beckett to silences in the scores of Luigi Nono, Anton Webern, and Salvatore Sciarrino (Metzer, 2006). Deborah Weagel draws connections between Beckett and Cage (Weagel, 2002). Catherine Laws has devoted a dynamic book to Beckett and music, noting parallels between Beckett's *Quad*, Cage's *4'33"*, and Mauricio Kagel's *pas de cinq* (Laws, 2013). It would be a compelling challenge to create a collaborative theatrical concert program around Beckett and silence.

Gesture and Silence

Gesture plays a critical role in performed musical silence. Embodied silence serves as a basis wherein the musician's internal states and interpretive gestures appear, offering a space for the audience's engagement and interpretative interaction (Acheson, 2008). Indeed, the audience gets many cues from embodiments. For example, behavioral psychology research shows that musical experts and non-experts can correctly identify the winners of international classical music competitions by watching videos of the contestants without sound. But this clear result is muddled if the original sound is restored (Tsay, 2013, p. 14583). Watching the videos *with the sound on* results in a less accurate prediction of the winners. Other analyses of cross-modal interactions in piano performances also suggest that visual kinematic cues can be stronger than auditory cues (Vuoskoski & Thompson, 2013).

These findings support my ideas on the importance of gesture in performing Beethoven's silences and form part of the growing literature on the role of gestures in music, a field that Giusy Caruso explores in a study of piano performance, emphasizing the distinctions between sound-producing, facilitating, and interpretative gestures (Caruso, 2018).

Meanwhile, *Romantic Anatomies of Performance* offers analyses of 19th-century embodiments, including gender, sexuality, and tactility, often with reference to performed silence and silencings (Davies, 2014).

Notation of gestures has evolved in the last few decades along with technological advances, from sketches to light-point analysis to more detailed video documentation methods. Although I have not developed a language nor notation of performed gestures for silence, I considered many potential ways of documenting and experimented with some sketches for an "alphabet of silences" (see Chapter 7). Current research continues to uncover new ways to capture and analyze non-verbal musical expressions (Davidson, 1993; Zbikowski, 2011). These methods allow for a deeper understanding of how performers' embodied silence can be communicated to and interpreted by audiences, a critical aspect of contemporary music performance and research (Davidson, 2012; Lüneburg, 2023).

The next chapter will engage with those authors who were most influential to my arguments, especially Roland Barthes, John Cage, Marcel Cobussen, Paul Craenen, Richard C. Littlefield, and Elizabeth H. Margulis.

The Noisy Archive

The Noisy Archive helps to illuminate the diversity and quality of musical silences. I have explored these possibilities in research that begins at the piano.[13]

Of course, my research has involved many additional research techniques: a study of the literature, interviews with performers and theorists, visits to anechoic chambers and architectural spaces, and discussions with scholars and musicians.

In real life, live performance is messy and unpredictable, resisting codification. My videos, plus waveforms and reflections on listening, offer a beginning, an attempt to examine the possibilities of markers in relation to silence.

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[13] I have deliberately chosen to focus on a musical language with which I am already (physically and intellectually) familiar due to the importance of embodiment to my studies. As a pianist trained in the classical European tradition, my approach to silence in musical performance is shaped by this music, in which silence is often seen as a structured absence framed by notated pauses and formal concert settings. My background may lead me to privilege western notions of silence, overlooking non-western or alternative perspectives. Additionally, the hierarchical relationship between performer and audience in western traditions may bias my understanding of how silence is embodied and communicated. While my research deliberately challenges these assumptions, I remain aware that my interpretations are influenced by the biases of my training and the repertoire I have chosen to portray.

One of the interesting aspects of musical silence is that it both reflects the past and anticipates the future. Indeed, the experience of silence is frequently described by the twin bookends of its relationship to the past (remembrance) and the future (anticipation). As a musician, I want silence to be navigated and felt, perceived in the moment of the performance, but related to what comes before or after. In the Noisy Archive, I will evoke dimensions and markers through which the performer and environment can influence the experience of silence.

Structure of the Dissertation

- Chapter 1 (this introduction) presents my **research question** and **key concepts** & **terminology** of silence drawn from science, musicology, and performance practice.
- Chapter 2 contextualizes the framework and notation and suggests **markers** for silence. Markers are signals used to shift attention and thus *impose* silence, *summon* silence, or *shape* the perception of silence.

Chapters 3 to 6 discuss examples of performed silence, with reference to gestures, markers, framing, connectivity, and embodiment:

- Chapter 3 is a **Noisy Archive** that examines **eloquent silences** in my performative practice as a pianist, giving a diversity of examples, stretching the definition of silence, and drawing from the terminology of Chapter 1 and the framework of Chapter 2.
- Chapter 4 is a case study analysis of mostly online performances of Cage's *4'33"*, emphasizing **audible markers** for silence.
- Chapter 5 is a case study analysis of **visual markers**, taking the embodied silences during the opening bars of Beethoven's last piano sonata as its specific point of departure.
- Chapter 6 is a case study analysis of **notational markers** in George Antheil's *Ballet mécanique*, with examples from my solo and collaborative practice.

- Chapter 7 offers some **Conclusions**.