

## Silences of staggering precision—George Antheil's *Ballet mécanique*

The original *Ballet mécanique* (1924) by George Antheil is a twenty-minute composition for sixteen mechanical pianos and seven percussionists: mostly a deafening cacophony including alarm bells, airplane propellers, and a fire siren. After eighteen hectic minutes of rhythmic pandemonium, the players suddenly fall silent despite an annoying ringing bell, which seems to last interminably, and then that too falls silent after a brief piano riff. This awesome silence is the first of many, each progressively longer, and more disorienting. The silences are notated in very fast units of time and are astonishing in their effect.

Antheil's use of brutal measured silence gave me the idea for this dissertation. It encouraged me to question how musical silence is made visible, what it consists of, and what its attributes are. I am particularly fascinated by Antheil's assertion about the silences that "here I had time moving without touching it." This is a compelling idea: is it possible: that by employing silence, a composer could be pushing time forward *without* acting upon it?

The markers for these silences—whether visual, as in the inert mechanical instruments on stage, or notational as in the meticulous scoring of the rests—serve as a key focus of this chapter. These markers do more than denote absence: they actively configure the audience's anticipation and reception of the audible, effectively making silence a palpable, agitated presence that is as precisely composed as any musical. This chapter will investigate the role of these silences within Antheil's work, examining how they function, not as gaps, but as integral, forceful, material components of the composition. The notated rests are emphatic and not connective, and they may be described as "nots" in the performance, sections of black noise, alternative communications of frenetic pulse and speed. The chapter concludes with an example drawn from my own performance practice, in which I collaborated with a choreographer to find new ways of embodying both noise and silence in this artwork.

Before analyzing the silences, here is a glimpse into Antheil's own aesthetic as a pianist, in the time he was composing *Ballet mécanique*:

As you [...] near the home stretch, you think, "What a way to make a living!" Later, when the piece is finished and you've gotten up and bowed and sat down again and mopped up your brow and your all-important hands, you think, "I wish I were a prizefighter. This next round with the Steinway would be a lot more comfortable in fighting trunks..." In the intermission, between group one and group two, you go to your dressing room and change every stitch you have on you: underwear, shirt, tie, socks, pants, and tails. Your other clothes are soaking wet.

You are twenty-two years old, trained down to the last pound like a boxer. You do not overeat, smoke, or drink, and you work six to eight hours a day at a piano with a special keyboard in which the keys are so hard to press down that when you come to your concert grand at night you seem, literally, to be riding a fleecy

cloud, so easy is its keyboard action. Before each concert, of course, you eat nothing at all. (Antheil, 1945, pp. 3–4)

This text, exaggerated as it is, gives a clear idea both of Antheil's disciplined practice and his onstage extravagance. The comparison to boxing is no accident, as he was notorious for his aggressive approach to the instrument, and his dramatic physical embodiment of his musical ideas. About the composition itself, he wrote:

As I saw it, my “Ballet mécanique” (properly played!) was streamlined, glistening, cold, often as musically silent as interplanetary space, and also often as hot as an electric furnace, but always attempting at least to operate on new principles of construction beyond the normal fixed (since Beethoven's Ninth and Bruckner) boundaries. [...] it was a “try” towards a new form, new musical conception, extending, I think, into the future. (Antheil, 1945, p. 140)

The original version of *Ballet mécanique* is very rarely performed. Antheil's 1924 composition was so radical, and so badly received, that he felt compelled to re-write it in 1953, reducing it to a shadow of its former self. In doing so, he completely suppressed his avant-garde silences. The revised version is shorter, less hectic, more restrained in its instrumentation, and shows a strong influence of movie music (he was working in Hollywood in the 1950s). The original version was forgotten and remained unperformed until a revival in 2000. Antheil thus never got the credit he deserved for his radical rests, because no one ever heard them.<sup>1</sup>

The two existing published versions are each problematic. The 1924 original involves 16 mechanical pianos (which can be played by midi instruments now) and nearly unplayably virtuosic notations. Meanwhile, the 1953 version is fun to listen to and perform, but has been trimmed of most of its avant-garde repetitions, its very long blocks of noisy sound, and all of its silences. In 2013 the SinusTon Festival in Magdeburg, Germany commissioned myself and Paul Lehrman to make an arrangement focused on the sounds and the electronics. Subsequent versions were refined for the *Société Musique Contemporaine de Québec* in 2017, and Ballet Zürich in 2024.

Although he had not yet composed *Ballet mécanique*, Antheil had floated a seminal idea in a letter (Whitesitt, yyyy, p???) as early as 1919. He described his dream of a pianist sitting in the center of the stage, surrounded by mechanical loudspeakers and levers which he would pull or push to create great walls of sound. While completely unrealistic at the time, Antheil's vision inspired Lehrman and me to create our new arrangement of *Ballet mécanique*. I took the original score and shortened parts of it, focusing on Antheil's most intricate and virtuosic piano sound, on the detailed xylophone parts, and on the dramatic eighth-note pulse that underlies the structure. Antheil scholar and MIDI-expert Paul Lehrman created the sound files for each of the instruments. Percussion parts were based on recordings made in Jordan Hall, Boston. Others were created digitally. I recorded the piano track in 2023 at Tufts University. The result is a 23-instrument digital recording. A

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<sup>1</sup> The work was only performed twice in his lifetime: once in Paris, and two years later in New York. The first performance led to a riot, and was a *succès de scandale*; the New York premiere was a technical and public relations disaster, and the ending was disrupted by audience protest and a malfunctioning siren.

24<sup>th</sup> track is the click track for the pianist, which I hear via a discreet earpiece, and that allows me to perform live in sync with the digital instruments. One of the problems that the arrangement addresses is the speed of certain instruments, which cannot be played at that tempo by human musicians. This includes my piano part, so that sometimes I assist and sometimes I am assisted by the digital performers to achieve an otherwise impossible level of virtuosity onstage.

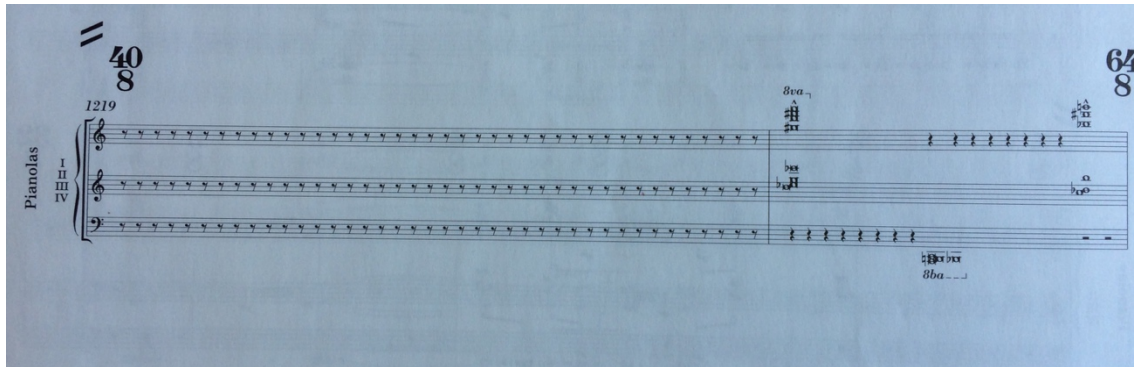


Figure 1: an agitated, *prestissimo* silence from *Ballet mécanique* (bar 1219)

The placement of the rests in the original composition (and in our arrangement) is impressive. During long minutes of crashing *fortississimo*, Antheil builds up the tension for the massive silences by placing a series of irregular silences into the music, though never exceeding three eighth notes. The music is incessant, overpowering, and overwhelmingly loud. From bar 1138 on, he begins stopping and starting the noise by inserting gradually longer chunks of rests. A few seconds later, in bar 1221 there is the most arresting silence hitherto composed: 64 eighth-note rests in a row, for a total of eighteen seconds of silence.<sup>2</sup> This comes during the finale of possibly the loudest piece of composed classical music.

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<sup>2</sup> In fact, the silence should clock in at twelve-and-a-half seconds, but that tempo (152=quarter note) is impossible for human musicians, making the actual silence much longer in a performance.



**Explanatory Video 1: Introduction to the silences of *Ballet mécanique*, drawn from a performance for midi-robot orchestra in Washington, DC**

Antheil's silence provocation has remained largely unnoticed by musicians, except for Maurice Peress' guide to conducting American music:

[...] an elaborate sacrifice is dramatized in the closing moments of the piece when, after a fiendish cadenza, the Pianola—the machine—breaks down. Antheil may very well have borrowed this notion from his Third Piano Sonata, *Death of Machines* (1923). The Pianola stutters and becomes stuck on a single phrase repeated over and over again: a trill and leaping clusters, followed by a moment of silence. As the “machine” winds down, the phrase is stretched out even more, and Antheil introduces increasingly longer silences. According to Slonimsky, this is the first time in the history of western music that silence is used as an integral part of a musical composition. [...] To my relief, our audience got the idea and did not interrupt the twenty-second-long silence with applause.<sup>3</sup> (Peress, 2004, p. 124)

Antheil's explanation of his intentions came in a letter to poet Ezra Pound:

Here I stopped. Here was the dead line, the brink of the precipice. Here at the end of this composition where in long stretches no single sound occurs and time itself acts as music; here was the ultimate fulfillment of my poetry; here I had time moving without touching it. (Antheil, in Whitesitt, 1989, p. 105)

AUDIO EXAMPLE: <https://www.researchcatalogue.net/view/1712958/1712966#tool-2011582>

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<sup>3</sup> I had lunch with Peress shortly after this performance, and he admitted how much he worried about these silences, dreading them in concert. His view seems shared by conductor René Bosc, with whom I performed *Ballet mécanique* at Radio France in 2004. Bosc recalled that the conductor has nothing to do during these long pauses because there are no emotions to communicate. He found that to be an uncomfortable position.



On page 129, almost at the end of the piece, comes an extremely long, empty bar containing 64 eighth notes of silence, perhaps the most dramatically printed page of silence ever.

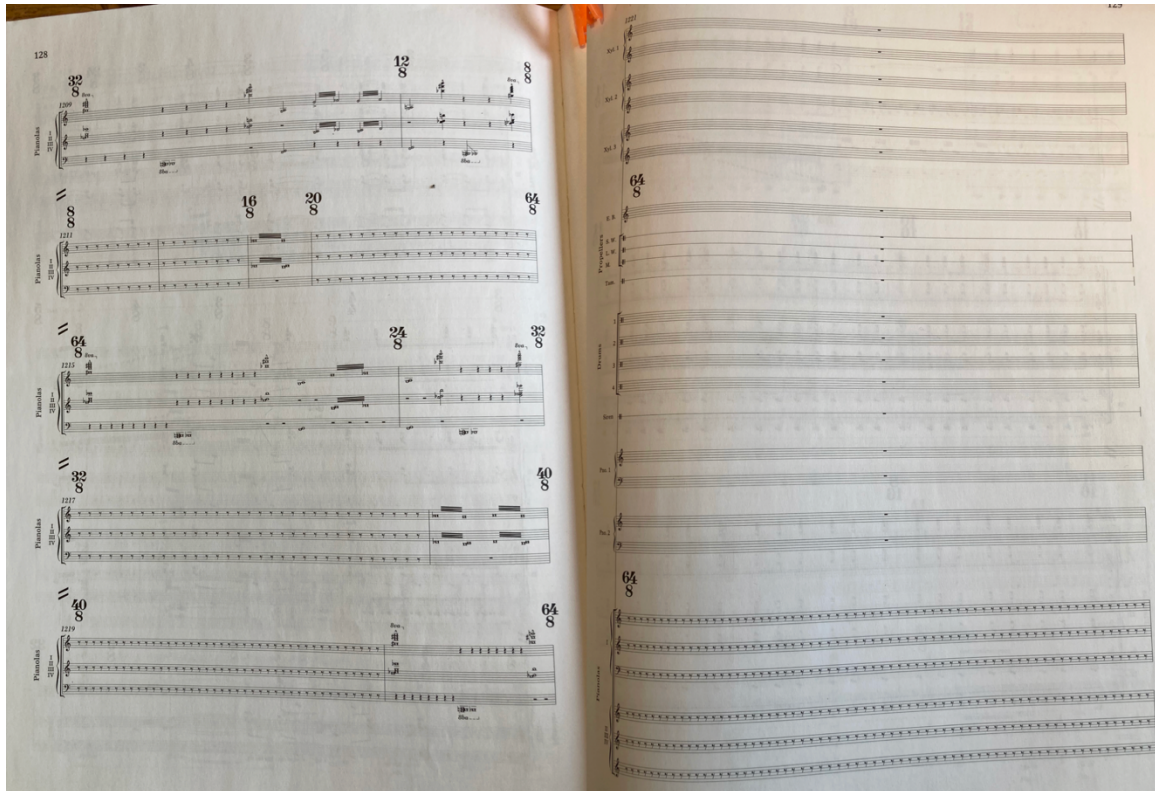


Figure 2: pages from the *Ballet mécanique* score showing increasingly long silences

Musicologist Julia Schmidt-Pirro describes the effect of these long silences:

[...] the music accelerates seemingly beyond control. Following this near chaotic passage, a musical turning point is suddenly reached: an unusually long passage of silence. [...] Coming right after the preceding masses of sounds, this sudden silence acts as a space in which previous notes seem to echo. (Schmidt-Pirro, 2006, p. 412)

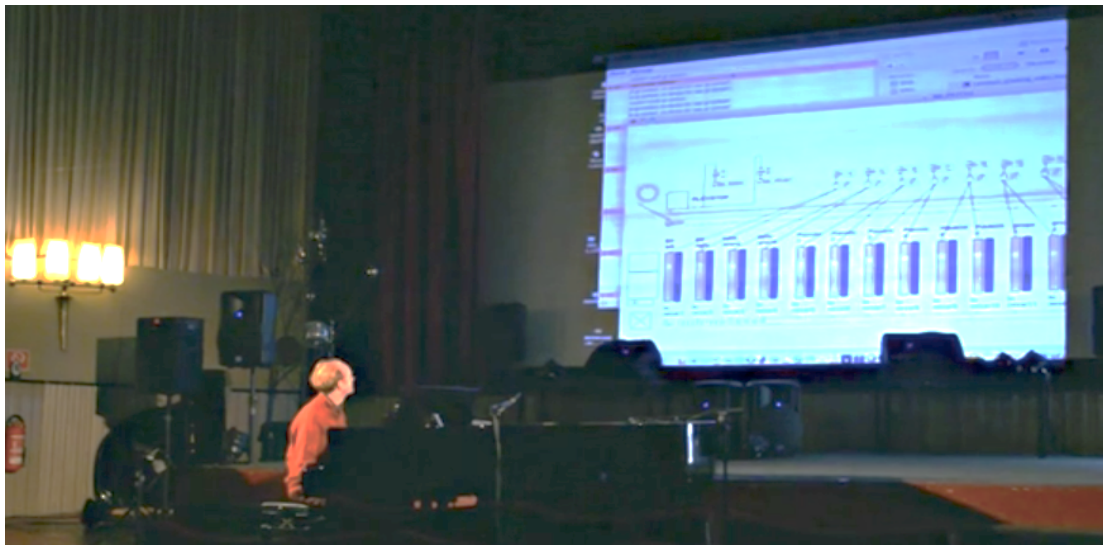
That echoing effect, like the residue of noise that one hears after a loud rock concert, or the silence when one struggles into the house during a windstorm, is the startling experience of these silences. Pirro continues:

One might argue that, in employing these passages of silence, Antheil does not so much interrupt sound with silence as invoke sound through its absence. (Schmidt-Pirro, 2006, p. 412)

I like Schmidt-Pirro's concept of evoking sound through its absence, similar to examples from [Pärt](#) and even [Chopin](#). But my own interpretation is slightly different: Antheil saw silence as a means of emphasizing the radical timescale of *Ballet mécanique*. The silences have a functional quality of interruption, making the noises before and after seem louder. But they serve more than that: the silences get longer and longer, becoming structural elements in their own right. The machine stops and starts, stops and starts, showing that Antheil is in control and that the machine obeys his will. The markers for these silences are the machinery arrayed over the stage: electric bells, a siren, two airplane propellers,

and sixteen player pianos.<sup>4</sup> During the long silences, the non-playing of these dramatic instruments marks noisy silence in the same way that the metal band [Dead Territory](#) embodies it in their interpretation of Cage's *4'33"*: by evoking an intensely dramatic and fraught situation that would in normal circumstances call forth a wall of sound.

The prescribed tempo in *Ballet mécanique* is so rapid that the performers cannot realistically count eighth notes in real-time. Yet Antheil deliberately chose to notate the silences in tiny slices of time, as long sequences of eighth-note rests. His score depicts something the audience and performers are experiencing: overwhelming silence *and* speed, the “death of machines,” a sort of comic desperation that would be seen a decade later in Charlie Chaplin's film *Modern Times* (1936).



**Figure 3: balancing the first eight-channel installation of *Ballet mécanique* with midi expert Paul Lehrman and composer Oliver Schneller at the SinusTon Festival in Magdeburg (2013)**

[Antheil was using sounds and silence as architectonic, structural components, and blocks in his “time-space” continuum (Oja, 2001, p. 84). Can you explain this Composing his music in terms of time-space was supposed to align it with the visual arts, and theories of the Dadaists and Futurists, especially as expounded by Tristan Tzara and Ezra Pound (Whitesitt, 1989 pg???)]. I would take this out. Only the first sentence can be interesting unless you explain it

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<sup>4</sup> In our Zurich arrangement, the missing mechanical instrumentation was figuratively replaced by the dancers, though not literally.



**Figure 4:** This photo is from the première performance with Ballet Zürich, January 20, 2024, of my arrangement of *Ballet mécanique* for solo piano and 64-channel sound system, with sound design by Paul Lehrman, choreography by Meryl Tankard, and projections by Régis Lansac

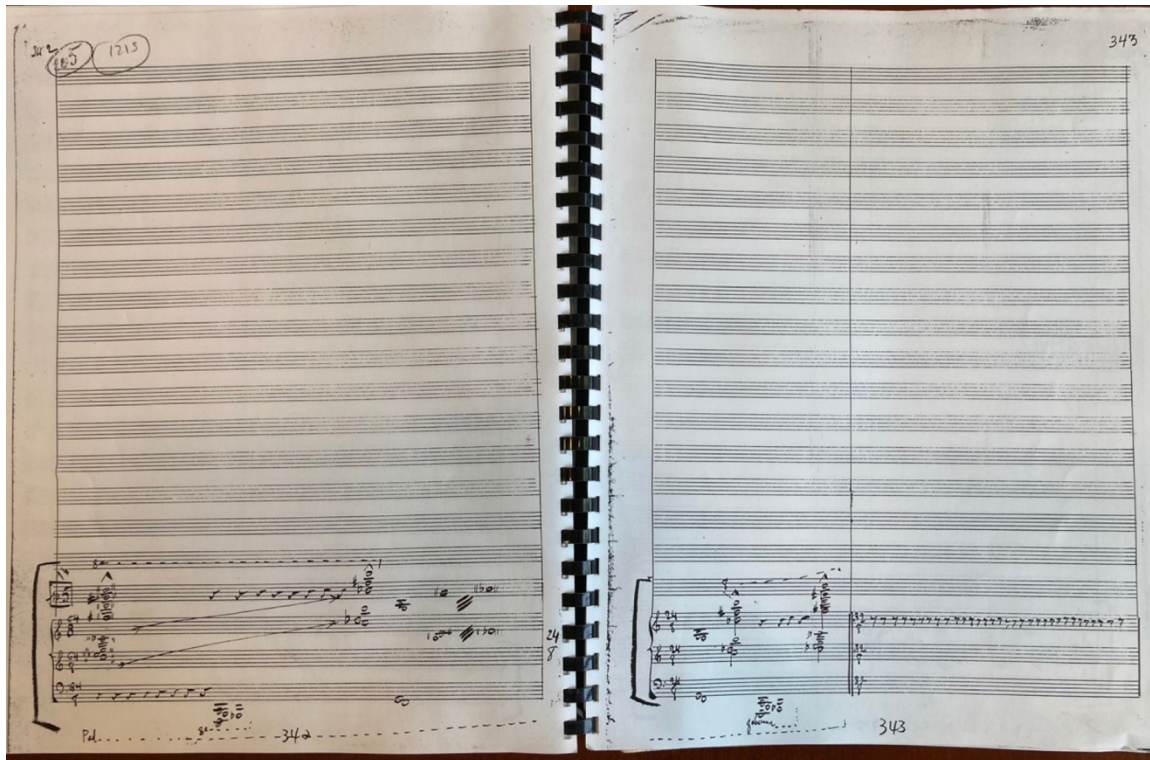
Did Antheil regret placing these extended and chronometrically precise voids amid the insanity of the *Ballet mécanique* and its airplane propellers, sirens, and alarm bells? This suggestion is supported by Antheil's revision of the score thirty years later, in which he removed all the silences. He was resentful of the scornful reception his artwork had received at Carnegie Hall in 1927, and felt it had ruined his career. But he was wrong to silence himself. I believe that the original silences were radically brilliant. The careful and methodical buildup of longer and longer rests is deliberate and compelling, a clear compositional strategy. Perhaps buildup is the wrong word, however. Each rest comes as a total surprise—the pauses are in no way prepared by the music. The music just abruptly stops, and then it continues. If there is an emotion, it is one of astonishment.

A contrast that I relish is the difference between Antheil's approach to silence and Cage's approach to silence. Here Cage reflects on materiality, in reference to silence:

Now what about material: is it interesting? It is and it isn't. But one thing is certain. If one is making something which is to be nothing, the one making must love and be patient with the material he chooses. Otherwise he calls attention to the material, which is precisely something, whereas it was nothing that was being made; or he calls attention to himself, whereas nothing is anonymous. (Cage, 1961, p. 114)

This is the opposite of what Antheil is doing: he is neither loving nor patient. More specifically, his use of eighth-note rests emphatically *calls attention to* this nothing. Antheil's nothing is not anonymous, and this is why I found it such a revelation. This is silence as materiality, silence as a thing, *silence as noise*. I am encouraged in this assumption by Antheil's letters (Whitesitt, 1989, p. 105), by Ezra Pound's analyses of Antheil's music, and most of all by the actual manuscript, written in Antheil's hand.



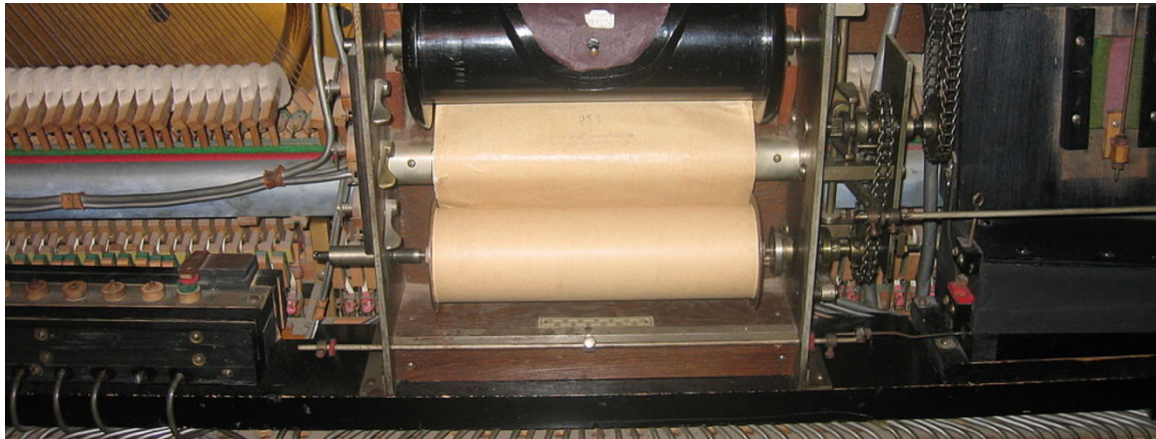


**Figure 5: photocopy of Antheil's manuscript (1923/24) showing the full bar of 32 eighth-note rests on page 343 (New York Public Library for the Performing Arts)**

The pianos are notated in a different manner than the percussion or other instruments. Those were intended to be mechanical pianos—hence the eighth note rests that are reminiscent of the punched holes in pianola rolls. I like this confluence of technology and graphic representation. A modern pianist performing this score does not need the restlessness of that representation. But the score contains its roots in the mechanisms that Antheil imagined, made tangible in an ever-turning piano roll.

The rapid succession of eighth-note rests in Antheil's score might lead the audience to perceive the silences as fast and agitated, echoing the mechanical nature of the pianolas which advance with relentless, regular motion. This perception could imbue the silence with a sense of speed and urgency, as though the silences are being propelled forward, metaphorically by Antheil's "time flowing through it" and literally by the momentum of the composition's machinery. Even if they do not see the score and do not know the history of the pianos, the audience might feel the flowing urgency of silence.

The pianolas suggest an unperturbed, flattened approach to metered time that does not distinguish between strong and weak beats. Antheil chose a meter of 8/8 (in place of 4/4), or more extremely 64/8 (in place of 32/4). By choosing a meter measured in eighth notes, he was ensuring that there would be neither strong nor weak beats.



**Figure 6: The inside of a pianola reveals the paper roll, the mechanism, and the air tubes that connect to the piano hammers. Unpunched paper equals silence. The holes in the paper equal specific piano notes. In this photograph, the paper is wound to the end, so no holes are yet visible. This picture is thus of the silence preceding the music.**

But was Antheil's choice to notate in eighth-note rests merely functional? In that case, it could be that he wrote out the eighth-note rests for technical reasons because the piano roll needed punching at that interval. But that is not the case. Although the short, repeated rests are reminiscent of the holes in a paper roll, they are *not* the holes. To encode a silence in the paper, there are no holes—just blank paper, or *ma*—only the space between the notes. Antheil could have (indeed maybe should have) notated the empty pianola measures with a number of beats (quarter notes were the standard), a duration in seconds, or simply a time signature. For a pianola does not *play* silence. Despite the continued rotation of the paper, it simply *does not* play. Antheil's choice to notate excessive numbers of eighth-note rests is either pointless micromanagement, or it is a way of communicating something important about the nature of the silence. The eighths could be seen as the quantification of time, linked to machinery and industrialization, again heralding the spirit of Charlie Chaplin's films.<sup>5</sup>

Another counterargument to my interpretation might be that the eighth notes are only visible to the performer. Antheil specifically wrote them in the automated pianola staff on his score. He notated nothing (not even staves) in the manuscript for the live performers during this cascade of silences. But I think this reinforces the idea of mechanical, inexorable, chopped-up silences: these *are* the silences of the machine. A 64/8 bar for Antheil makes a statement about sixty-four eighth-note divisions of time, which is not 32 quarter notes, nor 16 half notes. Also, the manner in which he notates the rests by hand, in a messy and confused script, recalls the hectic rush of Beethoven's [opus 111 manuscript](#). Antheil was in a hurry, but still took the trouble to physically write out the detailed rests.

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<sup>5</sup> A connection is often made between Antheil and Chaplin, because Fernand Leger and Dudley Murphy used a stylized cartoon of Charlie Chaplin ("Charlot") in the introduction to the *Ballet mécanique* film. However, Antheil was not yet aware of this when he wrote the music. It was simply in the air of the times, particularly for the Dadaists and Futurists, for whom Charlot's antic films merged dystopian and utopian futures. *Modern Times*, Chaplin's great satire of industrialization, was released twelve years after *Ballet mécanique*.



Onstage as performer, the tempo feels incredible, inevitable, awesome. By the time I arrive at the silences, the action up until then has been so wild and relentless that I am shaking. You fear that your breathing is louder than the silence and that your body will collapse under the pressure. And the audience is struggling with the same issue, paralyzed with a kind of fear at the sudden, awful silence. Even their ears are out of breath.

Antheil's silences unfold in a fast tempo and are often prefaced with extra loud sounds (electric bells) which might be considered auditory pre-markers for the silences. He is playing with the audience's expectations. By doing so, he creates fast and deafening silences, an effect that had never been heard before in classical music.

What is exciting to me as a pianist is that *Ballet mécanique* treats silence not as a gap nor an absence, but rather as a thick, heavy, powerful substance. The deafening quality of the silence arises because the preceding cacophony sets up an intense auditory expectation that, when abruptly met with silence, leaves a resonant void, an amplified silence that feels as loud and as materially present as the preceding rush of sound. The highly mechanized experience of this composition gives it an impersonal aggression in which the silence is as palpable, as "thingy" (Voegelin's term) as the noise.

This is how Antheil described his idea of the silences:

[...] here was the ultimate fulfillment of my poetry; here I had time moving without touching it. (Antheil, in Whitesitt, 1989, p. 105)

Although this creates a feeling of fear and destabilization for the performer, I argue that this musical silence is mechanical and impersonal. In some audience members, it may evoke fear or astonishment, but others describe it as "a gap that makes me aware of the impact of the loudness and obsessive ostinato rhythms on myself, and which also makes present the machines and instruments on stage." Give a reference [where is this from – PC?](#) By incorporating silence as an element of the music, Antheil emphasizes the mechanical nature of the piece, highlighting the start-stop action of machines.<sup>6</sup>

After I had written it, I felt that now, finally, I had said everything I had to say in this strange, cold, dreamlike, ultraviolet-light medium. (Antheil, 1945, p. 137)

The effect is to make the resumption of sound more striking and to give the composition a disjointed, almost cinematic pacing, akin to the editing of a film. Each strange, cold, ultraviolet onslaught of silence is followed by an onslaught of sound. The silence contains no affect, no emotion, no meaning. It is not multidimensional, to use Margulis' term. Antheil refers to the silence of interplanetary space, and the heat of an electric furnace, but these are not rhetorical notes nor silences in the sense of serving a narrative function within the music. The silences deliberately exist without and separated from the music around them. If any emotion is communicated, then it is astonishment, surprise, or a sensation of overwhelming intensity. And that surprise-separation affect suggests control

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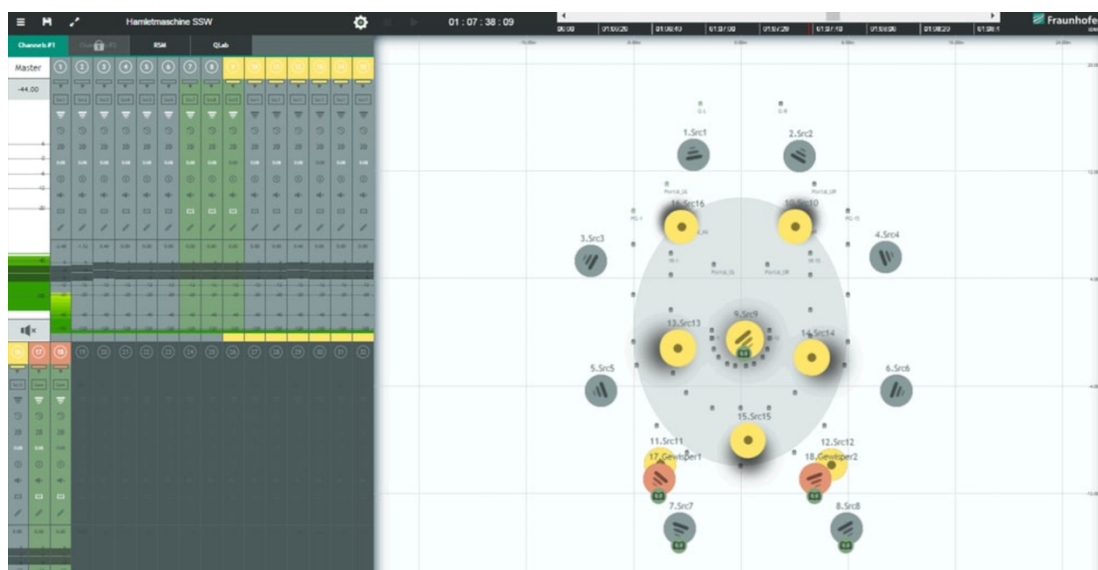
<sup>6</sup> Antheil was, like the Futurists, consumed with technological "progress," as reflected in the titles of his compositions during this period: *Sonate für Radio*, *Death of Machines*, *Airplane Sonata*, *Mechanisms*, etc.

and power, reinforced by the mechanization of the instruments that frame the silences. In Antheil's futurist 1920s world, silence becomes its own kind of thundering, a time moving without us touching it.



**Figure 7: dancers of the Zurich Ballet perform the “mechanization” via choreographic embodiments**

My collaboration in 2024 with Ballet Zürich dispensed with the eponymous film (which in any case Antheil was not involved with) and attempted to create embodiments through a focus on one musician (myself) and eighteen dancers. The music was arranged by myself and Paul Lehrman for solo piano and 64-channel playback, to create a three-dimensional sonic experience surrounding the audience, and to intensify the experience of time moving inexorably through the silences; and of the silences being relentlessly pulsed in eighth notes.



**Figure 8: Testing the software used for distributing the sound around the Zurich opera house**

Like any complex collaboration between many actors and within the administrative context of a busy opera house, this project did not permit the types of experimentation characteristic of a research project. But using a 64-channel mixing board, 64 focused speakers, and an array of sub-woofers, we were able to manipulate the original recording so that the sounds of the 23 instruments could be moved around the hall in real-time. This was particularly effective with the sirens, which gained in intensity by traveling through the hall in three dimensions. The pianola sounds, however, were set to fixed positions, so that they appeared to come each from a specific and pre-determined location in the hall. Our purpose was an attempt to come as close as possible to Antheil's dream of a lone pianist surrounded by mechanical instruments. Following this vision, sound engineers Paul Lehrman (Tufts University) and Raphael Paciorek (Zurich Opera) created an immersive electronic "performance" of our version of *Ballet mécanique*. Simultaneously, I was working with the dancers and the choreographer. This video documents some of our work in rehearsals.



**Explanatory Video 2: experimenting with silences and embodiments during rehearsals of *Ballet mécanique* with Ballet Zürich (2024)**

During the weeks leading up to the premiere, I continually experimented with new ways of performing silence. The choreography by Meryl Tankard gave primacy to Antheil's assault on hearing as if the dancers were being attacked by walls of mechanized sound. This made the rests towards the end all the more remarkable, for their unexpected absences and their "loudness."



**Figure 9: Rehearsing *Ballet mécanique* in Zurich: my hands curl rapidly off the piano keys (inspired by Richter) to emphasize the precision start of a silence. The bright jacket also catches the light, amplifying my gestures to the scale of the theater.**

From the piano, I tried different means of embodying the silences, especially influenced by the Beethoven performances in Chapter 5. Gestures like Richter’s “reverse boxer” or Kissin’s “dentist” took on new strength when employed in Antheil’s modernist rests. No longer expressing Beethoven’s anguish, nor the isolation of the “lonely prince,” these embodiments launched the thundering silences and granted the audience some insight into the speed of the notation, and the internal pulse I was feeling (see the explanatory video above). So these movements also came to embody the frenzy and restless precision of Antheil’s silences.

German composer Helmut Lachenmann writes about another “restless” silence:

The silence into which Nono’s late works lead us is a *fortissimo* of agitated perception. It is not the sort of silence in which human searching comes to rest, but rather one in which it is recharged with strength and the sort of restlessness which sharpens our senses and makes us impatient with the contradictions of reality. (Lachenmann, 1999, p. 27)

This *fortissimo* of agitated perception in Nono’s music arises from the complexity of the music, the denseness of its constant changes, and the technical difficulties of performing it. Antheil’s music is simpler, in architectonic blocks that are stacked and arranged in patterns. Yet the restlessness of the silence is very similar, sharpening our senses and heightening the contradictions of the environment.

During these silences, the dancers also created (inadvertent) sounds with their moving bodies. These were intended more as markers for movement or for action rather than markers for silence, but served also as a reminder of the disconnected, restless nature of these silences. Silences were also embodied by the dancers through posed attitudes, collapse, or frenetic motions. Contrary to our expectations that silence should map to stillness in the choreography, it transpired that high-intensity gestures afforded meaning



to the stillness of the music, and that these gestures offered unexpected ways of communicating Antheil's rests to the audience.

As with Cage's *4'33"*, the stillness anticipated in conventional musical performances is subverted, echoing his use of high-intensity gestures that articulate the rests in unexpected manners. In Cage's silence, every rustle, cough, or murmur heightens the listener's awareness, emphasizing the restlessness and connectivity of the environment, making the audience acutely aware of the sounds that are always present but seldom listened to. Similarly, Antheil's silent intervals act not just as a negation of music but as an exposition, drawing the audience's attention to the "noise" that surrounds the supposed stillness.

Working almost a century later than Antheil, but concentrating on similar themes, the South African experimental audio artist and DJ Jacques van Zyl writes about his own music:

In a profoundly unsilent world, noise stands in for silence. Amplified to a roar, stretched, compressed and filtered, it becomes a thundering black backdrop to how small experience becomes by having to filter out detail.

On the other hand, black noise is a space—the negative roar left behind after the sudden ending of any continuous sound field. It's not unlike the state sought in the practice of meditation, but more immanent and beyond one's control, and commonly only of short duration. (Zyl, 2018)

Zyl's musical idea merges with the negative roar of Antheil's silence: the thundering black backdrop that shrinks experience. What Antheil might like us to hear *is* the negative roar, the ultimately uncontrollable. And that is much like experiencing [Zyl's black noise](#) after hearing extremely loud sounds. For that reason, I contend that these silences do not serve a connecting function. They are *not*, without an element of *knot*. As at a rock concert, we revel in the disconnections of the thundering backdrop, the noisy silence. Looking back at the examples from Beethoven, the most similar is Richter's "reverse boxer", in which the 1F and 2F rests are used to articulate the form, and are astonishing in their sudden disconnective embodiments. Richter shares with the band Dead Territory this veiled threat of violence underneath the silences, which is enacted and embodied in the margins of performed silence.

## Markers

Antheil integrates silence not just as a musical element but as a component that is essential for the structural and expressive dynamics of the piece. The way these silences are presented and perceived can be significantly influenced by embodied markers—visual or physical cues from the performers that highlight and contextualize these moments of silence.

- **Visual Impact:** The mechanical instruments themselves, such as player pianos and percussion instruments, along with the anti-traditional, Dadaist objects (airplane propellers, sirens, and electric bells), serve as physical, theatrical markers that underscore the silences. When these instruments abruptly cease making sound, their visual presence continues to resonate with the audience, enhancing the impact of the silence that follows. The sudden absence of mechanical noise makes the silence more profound, with the visual reminder/remainder of the instrument's capacity for noise



serving to heighten the sensory contrast, just as in Dead Territory's performance of 4'33".

- **Performer Interactions:** The actions and reactions of the performers during the moments of silence act as embodied markers. In our Zurich workshops, we started with the assumption that a performer might abruptly halt their movement, freeze in place, or execute a dramatic cessation of activity that coincides with the onset of silence. But soon we moved on to a more complex interpretation, which emphasized the agitation of the silences. Actions occurred, dancers collapsed, and the pianist froze in increasingly dramatic poses. Such visual cues can significantly shape the audience's experience and interpretation of these silent intervals, making them more deliberate and integral to the performance.
- **Choreographic Elements:** In staged performances of *Ballet mécanique*, choreography and stage direction can play a crucial role in marking silence. The way performers move or do not move, the lighting changes, the positioning of performers on stage, and the video projections all act as markers that signal and frame both the sounds and the silences, especially guiding the audience's attention to the long and frenetic rests as a potent element of the composition. Although my choreographic choices were limited by the piano, the choreographer chose a large white dinner jacket for me, which "amplified" my gestures.
- **Inadvertent sounds:** the noise of the dancer's toes brushing the floor, their breathing, the rustles of their costumes, the pounding of their feet during the energetic sections—all of these created a soundscape that was audible on stage and in the front rows. My experience of the performance was imbued with these "extra" sounds, meaning that, for the artists and anyone near the stage, silence was impossible.
- **Silence as "not":** the silences resonate not as interludes but as profound embodiments of non-existence—what Lachenmann describes as a "fortissimo of agitated perception." Yet, where Lachenmann sees a charging of human perception, Antheil's approach engenders a distinct disconnection, a deliberate suspension of playing and performing. I have argued in this chapter that these silences, far from incidental, are architectonic voids deliberately structured within the insane noise and agitated clamor of the composition. They articulate a "not" that is about absence, negating not just sound, but the very presence and continuity of the musical narrative. In this stark negation, Antheil compels the audience to confront the non-being, the non-playing—a radical quiet that amplifies the chaotic roar that precedes and follows.

These visual and audible markers of the artwork do more than signal a change in sound; they enrich the audience's engagement, allowing the silence to communicate as powerfully as sound. They transform the silence from an absence of noise into a dynamic noise of another kind—the noise left behind by the notes, a noisy silence, Zyl's black noise.

[The embodied silences in Antheil's score, marked by the dancers' frenetic stillness or sudden collapses, do not merely punctuate; they enable time's flow, creating a disconnection where each eighth note rest serves a pulsating purpose. In Antheil's aesthetic sphere, silence emerges not as a connector but as a profound disruptor, a radical architectonic element that isolates, and roars.] It seems to me that this still belongs to "Silence as not"

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